



## Aoridae\*

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### Abstract

Five genera and 21 species of aorids are reported from the Great Barrier Reef, most of which belong to the genus *Bemlos*. One third of the species are new to science and half of them are currently known only from the Great Barrier Reef.

**Key words:** Crustacea, Amphipoda, Aoridae, Great Barrier Reef, Australia, taxonomy, new species, *Aoroides palfreyensis*, *Aoroides parvus*, *Autonoe seurati*, *Bemlos aequimanus*, *Bemlos australis*, *Bemlos bidens*, *Bemlos clypeatus*, *Bemlos ephippium*, *Bemlos gladius*, *Bemlos mollis*, *Bemlos triangulum*, *Bemlos tridentatus*, *Bemlos tui*, *Bemlos waipio*, *Globosolembos excavatus*, *Globosolembos longispinosus*, *Globosolembos ovatus*, *Globosolembos springthorpei*, *Globosolembos varanus*, *Grandidierella bonnieroides*, *Grandidierella rhizophorae*

### Introduction

The Aoridae are distributed worldwide but reach their greatest diversity on coral reefs. They occur in marine and brackish habitats, in shallow water and more rarely in the deep sea. Those that occur in shallow water often have cryptic patterning on the dorsum that can be species specific (Myers 1988b). They are detritivores, but may also be opportunistic predators (Myers 1971). They construct tubes of ‘amphipod silk’ and the males have an enlarged and complex gnathopod 1. Five genera and 21 species of aorids are reported from the Great Barrier Reef, most of which belong to the genus *Bemlos*. Such a high species richness of Aoridae has not been reported from any other reef system, worldwide. One third of the species are new to science and half of them are currently known only from the Great Barrier Reef.

### Materials and methods

The descriptions were generated from a DELTA database (Dallwitz 2005) to the aorid genera and species of the world. Material was hand-collected on scuba and is lodged in the Australian Museum, Sydney (AM). A set of colour plates, list of standard abbreviations and detailed station data is available in Lowry & Myers (2009). A CD (*Benthic Amphipoda (Crustacea: Peracarida) of the Great Barrier Reef: Interactive Keys*) is available with the book or the keys can be accessed at the crustacea.net website.

**Aoridae Stebbing, 1899**

***Aoroides* Walker, 1898**

***Aoroides palfreyensis* sp. nov.**

(Figs 1, 2)

*Aoroides vitiosus*. —Myers, 2005: 355 (not *A. vitiosus* Myers, 1995: 27, figs 1, 2).

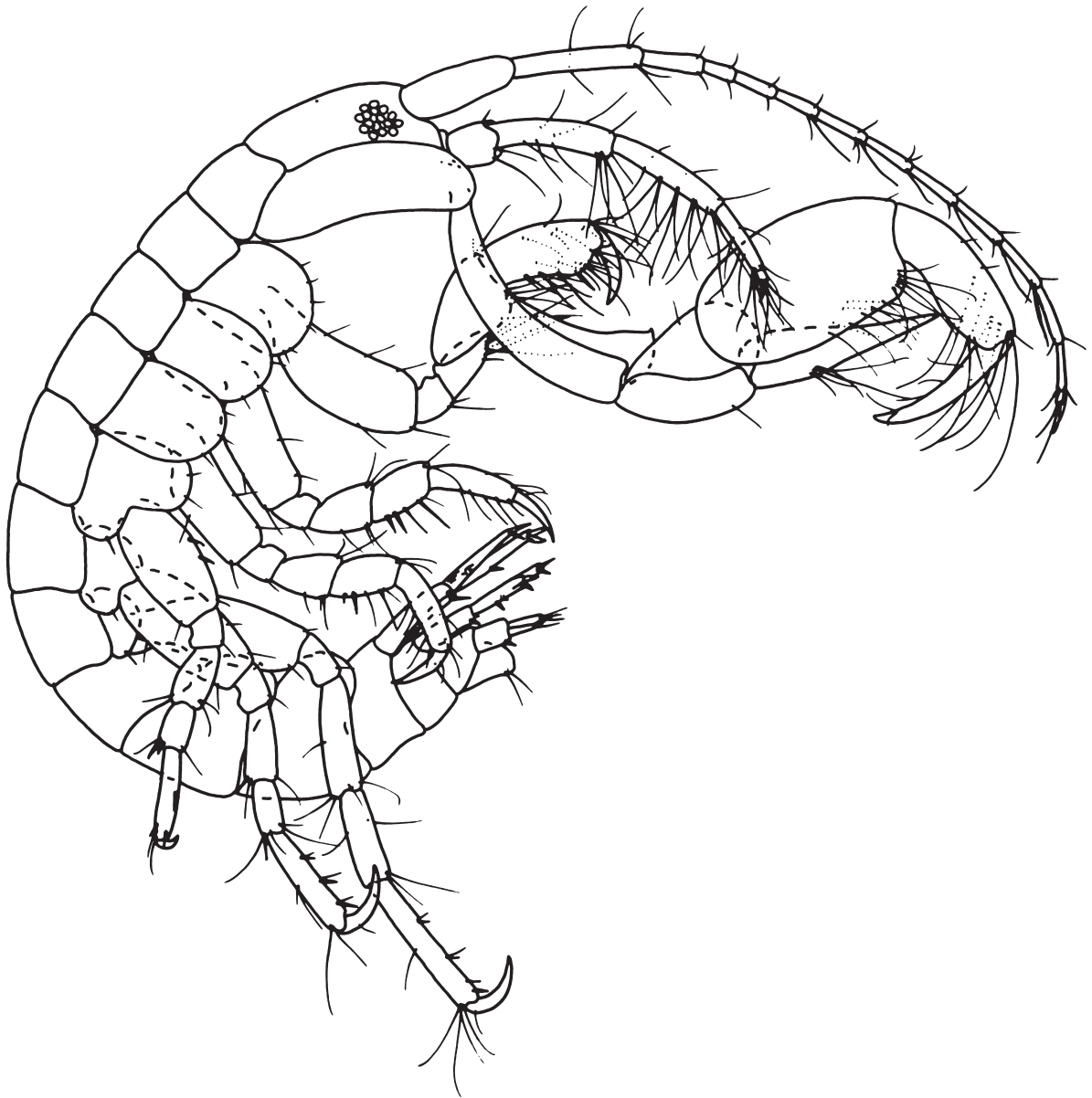
**Type material.** Holotype, male, 1.8 mm, AM P75478, rubble zone on south-east side of Palfrey Island, Lizard Island (14°41'S 145°27'E), heavy algal turf, fine sediment, rubble on sandy substrate, 1 m, J.D. Thomas, 4 February 1989 (JDT/LIZ 20). Paratype: female, AM P75479, same station data.

**Additional material examined.** 1 male, 1 female, AM P77553 (JDT/LIZ 20).

**Type locality.** Palfrey Island, Lizard Island, Queensland, Australia (14°41'S 145°27'E).

**Etymology.** Named after the type locality.

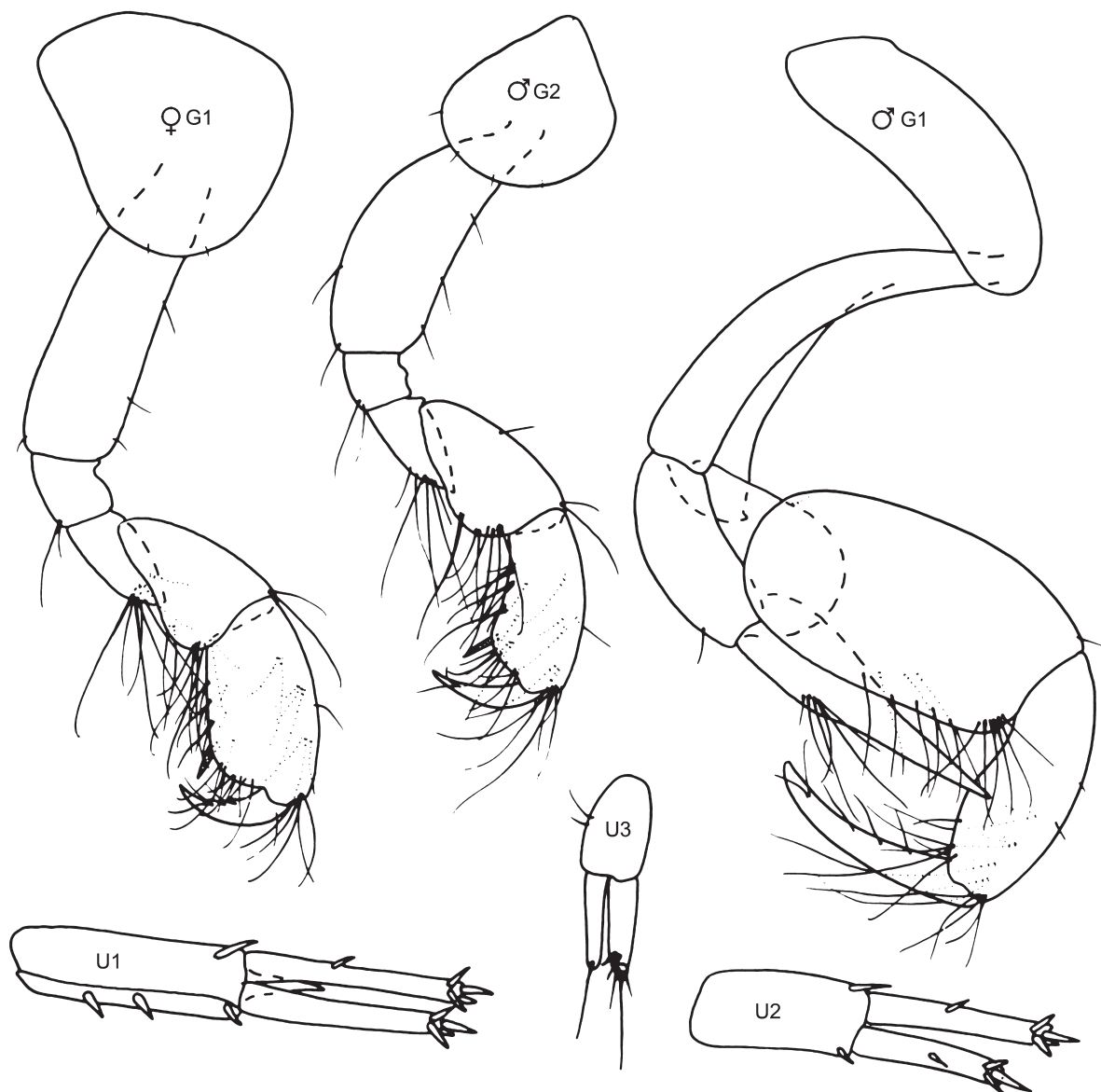
**Description.** Based on holotype, male, 1.8 mm, AM P75478.



**FIGURE 1.** *Aoroides palfreyensis* sp. nov., holotype, male, 1.8 mm, AM P75478, Palfrey Island, Lizard Island, Great Barrier Reef.

**Head.** Head lateral cephalic lobes apically round. *Antenna 1* flagellum with about 11 articles; accessory flagellum absent. *Antenna 2* with few long setae. *Lower lip* with fine setae only. *Maxilla 1* inner plate with 1 long pectinate apical seta. *Mandible*, palp absent.

**Pereon.** *Pereonites* without sternal spines. *Gnathopod 1* enlarged in males only; coxa anterodistally rounded; basis slender, much less than half as broad as long, without a spine, posterodistal margin with setae absent, anterodistal margin with strong acute flange; ischium anterior margin with strong flange, posterodistal margin with few setae; merus elongated as long as or longer than carpus, distally free and produced along posterior margin of carpus, posterior margin with few setae, without posterodistal spine; carpus longer than propodus, anterior margin without setae, without spine, posterior margin without spines; propodus anterior margin with few long setae, posterior margin sinuous, palm absent; dactylus subequal in length with propodus. *Gnathopod 2* subchelate; basis anterodistal margin weakly concave, without flange, posterodistal margin without robust setae; merus not enlarged; carpus subequal in length with propodus, anterior margin not lobate, with short, sparse setae; propodus anterior margin with short sparse setae, with robust seta defining palm. *Pereopod 3* without brush of long setae on merus. *Pereopod 6* basis not produced posterodistally. *Pereopod 7* about 125% length of pereopod 6.



**FIGURE 2.** *Aoroides palfreyensis* sp. nov., holotype, male, 1.8 mm, AM P75478, paratype female, 1.8 mm, AM P75479, Palfrey Island, Lizard Island, Great Barrier Reef.

**Pleon.** *Epimeron* 3 posterodistal margin rounded. *Uropod* 1 rami subequal, peduncle much longer than broad, distoventral spine shorter than peduncle. *Uropod* 2 biramous, inner ramus longer than outer ramus, peduncle without distoventral spine. *Uropod* 3 biramous, rami subequal, inner ramus a little shorter than peduncle. *Telson* with distal fine setae only.

**Female** (sexually dimorphic characters). Based on paratype, female, AM P75479. *Gnathopod* 1 merus not greatly elongated, not distally free; carpus shorter than that of male, shorter than propodus. *Gnathopod* 2 more slender than that of male, basis anterior margin straight, carpus and propodus subequal.

**Habitat.** Algal turf and rubble on a sandy substrate.

**Remarks.** This species is very close to *Aoroides vitiosus* Myers, 1995 from Papua New Guinea, which also lacks a mandibular palp. Myers (1995) gave reasons for retaining the genus *Aoroides* for species of this genus lacking a mandibular palp. The loss of a palp probably occurs by a single point mutation rather than by gradual loss. There are no other generic level differences between species with and those without a mandibular palp. It differs from *A. vitiosus* in the acute ending anterodistal flange on the basis of the male gnathopod 1 (rounded in *A. vitiosus*) and in the shape of the merus of the male gnathopod 1 which in *A. vitiosus*, is much shorter than the carpus and constricted at the base of its free portion, whereas in *A. palfreyensis*, it is longer than the carpus, and evenly tapering. Other differences are the evenly curved posterior margin of the carpus of the male gnathopod 2 in *A. palfreyensis* (straight in *A. vitiosus*) and the shorter carpus of the female gnathopod 1 in *A. palfreyensis*. The pereopods and the uropods are more slender in *A. vitiosus* than they are in *A. palfreyensis*.

**Distribution.** *Australia*. Queensland: Lizard Island (current study). *Society Islands*. Austral Isles (Myers 2005).

### *Aoroides parvus* sp. nov.

(Figs 3, 4)

**Type material.** Holotype, male 1.8 mm, AM P70701, Watsons Bay, Lizard Island (14°39.689'S 145°26.872'E), scrapings from mooring block, sandy bottom with mounds and *Udotea*, 8.3 m, P.B. Berents & L. Hughes, 24 February 2005 (QLD 1636). Paratypes: 3 males, 4 females, AM P75465 (QLD 1636), 3 males, 9 females, AM P70716 (QLD 1636), same data.

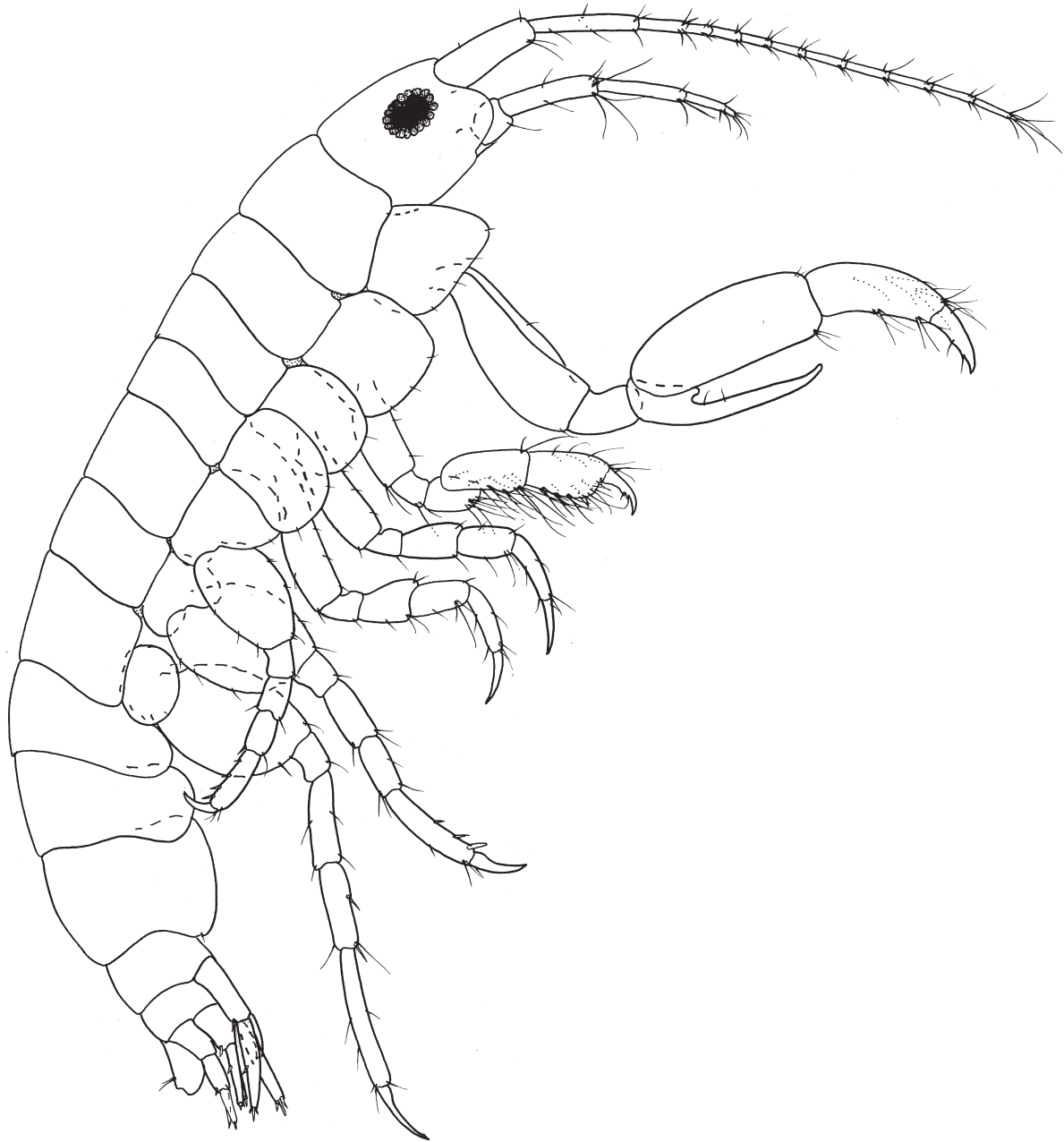
**Type locality.** Watsons Bay, Lizard Island, Queensland, Australia (14°39.689'S 145°26.872'E).

**Etymology.** Referring to its diminutive size.

**Description.** Based on holotype, male, 1.8 mm, AM P70701.

**Head.** Head lateral cephalic lobes apically round, *Antenna* 1 flagellum with about 9 articles; accessory flagellum absent. *Antenna* 2 with few long setae. *Lower lip* with fine setae only. *Maxilla* 1 inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 longer than 2, posterior margin straight, posterior margin without setae

**Pereon.** *Pereonites* without sternal spines. *Gnathopod* 1 enlarged in males only; coxa weakly produced anterodistally; basis slender, less than half as broad as long, without a spine, posterodistal margin with setae absent, anterodistal margin with weak flange; ischium anterior margin without flange, posterodistal margin without setae; merus greatly elongated, distally free and produced along posterior margin of carpus, posterior margin with few setae, without posterodistal spine; carpus longer than propodus, anterior margin without setae, without spine, posterior margin without spines; propodus anterior margin with few setae, posterior margin straight, palm absent; dactylus less than half length of propodus. *Gnathopod* 2 subchelate; basis anterodistal margin straight, without flange, posterodistal margin without robust setae; merus not enlarged; carpus longer than propodus, anterior margin not lobate, with short, sparse setae; propodus anterior margin with short sparse setae, with robust seta defining palm. *Pereopod* 3 without brush of long setae on merus. *Pereopod* 6 basis not or weakly produced posterodistally. *Pereopod* 7 significantly less than 125% length of pereopod 6.



**FIGURE 3.** *Aoroides parvus* **sp. nov.**, holotype, male, 1.8 mm, AM P70701, Watsons Bay, Lizard Island, Great Barrier Reef.

**Pleon.** *Epimeron* 3 posterodistal margin with small notch. *Uropod* 1 rami subequal, peduncle much longer than broad, distoventral spine shorter than peduncle. *Uropod* 2 biramous, inner ramus longer than outer ramus, peduncle with short distoventral spine less than one quarter length of peduncle. *Uropod* 3 biramous, rami subequal, inner ramus shorter than peduncle. *Telson* with distal fine setae only.

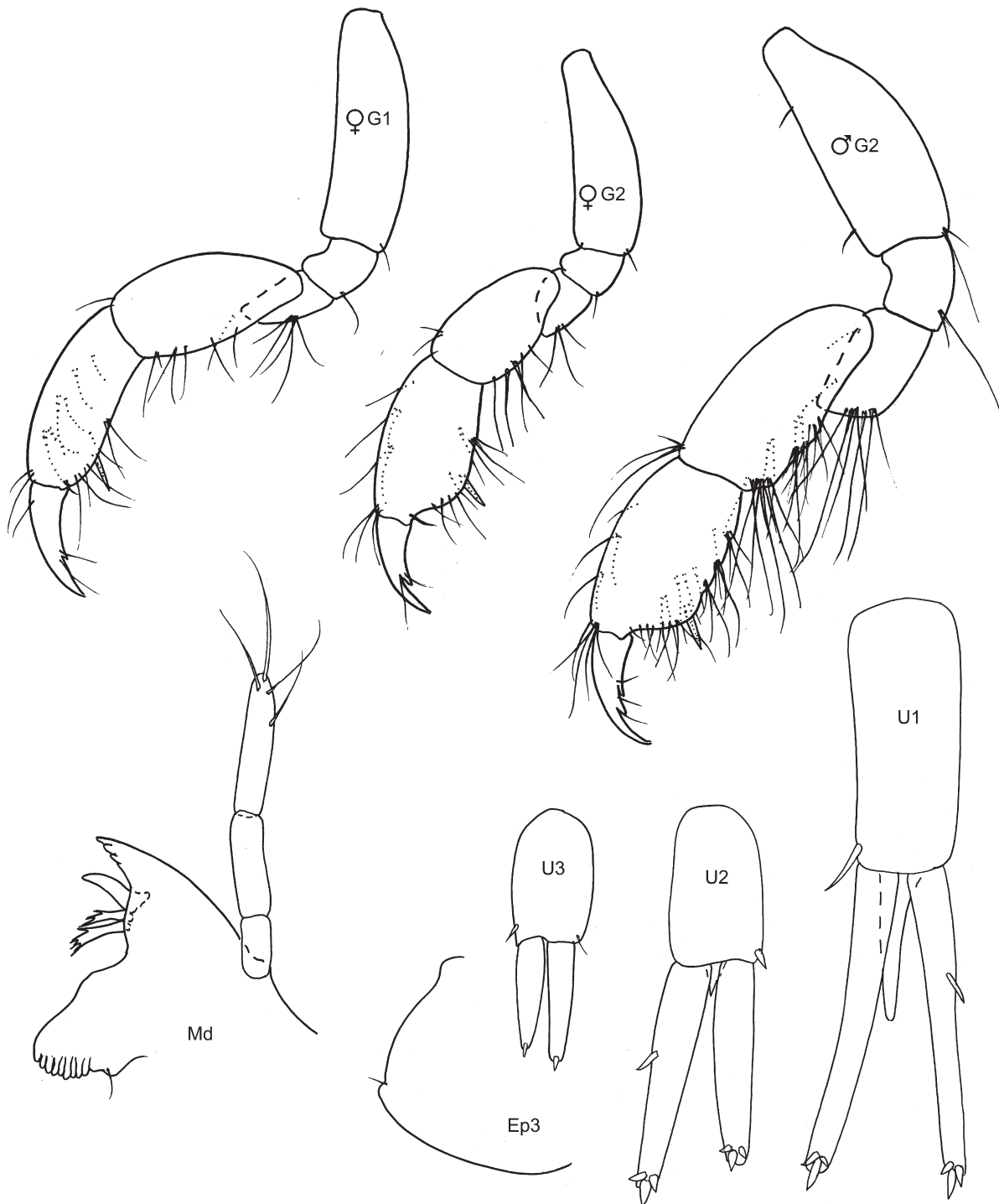
**Female** (sexually dimorphic characters). Based on paratype, female, 2.1 mm, AM P75465. *Gnathopod* 1 merus not greatly elongated, not distally free; carpus shorter than that of male, subequal with propodus. *Gnathopod* 2 more slender than that of male, carpus shorter than propodus.

**Habitat.** Among encrusting flora and fauna on mooring block, over sandy bottom.

**Remarks.** *A. parvus* differs from most described species of *Aoroides* by the poorly setiferous male gnathopod 1 and by the very short dactylus of that appendage. It differs from *A. nahili* J.L. Barnard, 1970 in

having the merus of the male gnathopod 1 shorter than the carpus, inward curved and not ending acutely and from *A. columnaris* Ariyama, 2004 and *A. curvipes* Ariyama, 2004 in the weakly produced male coxa 1.

**Distribution.** *Australia.* Queensland: Lizard Island (current study).



**FIGURE 4.** *Aoroides parvus* sp. nov., holotype, male, 1.8 mm, AM P70701, paratype female, 2.1 mm, AM P75465, Watsons Bay, Lizard Island, Great Barrier Reef.



*Autonoe* Bruzelius, 1859

*Autonoe seurati* (Chevreux, 1907), nov. comb.

(Figs 5, 6)

*Xenoecheira seurati* Chevreux, 1907: 416. —Chevreux, 1908: 510, figs 26–28. —Schellenberg, 1938b: 86. —Ledoyer, 1984: 41, fig. 19. —Moore, 1988: 712, figs 4–7. —Lowry & Stoddart, 2003: 73 (catalogue).

**Material examined.** 1 male, 1 female, AM P70696 (QLD 1640); 1 male, AM P70728, (QLD 1640); 2 males, 4 females, AM P70751 (QLD 1645); 2 males, AM P70724, (QLD 1646); 2 males, 2 females, AM P70739 (QLD 1647); 2 unsexed, AM P75573 (QLD 1863); 7 unsexed, AM P75673 (QLD 1878); 4 unsexed, AM P75672 (QLD 1895); 2 unsexed, AM P 75674 (QLD 1902); 1 unsexed, AM P75676 (QLD 1903); 2 unsexed, AM P75574 (QLD 1905); 1 unsexed, AM P75675 (QLD 1927); 4 unsexed, AM P75579 (QLD 1927).

**Type locality.** Mangareva Island, Gambier Islands, French Polynesia (~23°5'57"S 134°58'1"W).

**Description.** Based on male, 3.0 mm, AM P70739.

**Head.** Head lateral cephalic lobes apically round. *Antenna 1* flagellum with about 12 articles; accessory flagellum with one long and one distal rudimentary article. *Antenna 2* with few long setae. *Lower lip* with fine setae only. *Maxilla 1* inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 longer than 2, posterior margin straight or weakly falcate, posterior margin with setae of more than two distinct lengths.

**Pereon.** *Pereonites* without sternal spines. *Gnathopod 1* enlarged in both sexes; coxa weakly produced anterodistally; basis robust, half or more as broad as long, without a spine, posterodistal margin with setae absent, anterodistal margin with strong flange, densely covered in long setae; ischium anterior margin without flange, posterodistal margin with long setae; merus not elongated, fused along its entire length with carpus, posterior margin with dense rows of setae, without posterodistal spine; carpus subequal in length with propodus, anterior margin with long setae, without spine, with an oblique row of long setae on inner face, posterior margin without spines; propodus anterior margin with long setae, posterior margin straight, palm present, sinuous, delimited from posterior margin, by subquadrate corner, with robust seta defining palm, without spine near base of dactylus; dactylus about half length of propodus, fitting palm. *Gnathopod 2* subchelate; basis anterodistal margin convex, without flange, with dense long setae, posterodistal margin without robust setae; merus enlarged elongate, anterodistal margin with dense long setae; carpus subequal with propodus, anterior margin lobate, with long dense setae; propodus anterior margin with long dense setae, without robust seta or spine defining palm. *Pereopod 3* without brush of long setae on merus. *Pereopod 5* basis enlarged, posterodistal and anteroproximal margins with short robust setae. *Pereopod 6* basis not or weakly produced posterodistally. *Pereopod 7* significantly greater than 125% length of pereopod 6.

**Pleon.** *Epimeron 3* posterodistal margin rounded. *Uropod 1* rami subequal, peduncle much longer than broad, distoventral spine about half length of peduncle. *Uropod 2* biramous, endopod longer than exopod, peduncle with distoventral spine over two thirds length of peduncle. *Uropod 3* biramous, rami subequal, inner ramus 1.5 x length of peduncle. *Telson* with distal fine setae only.

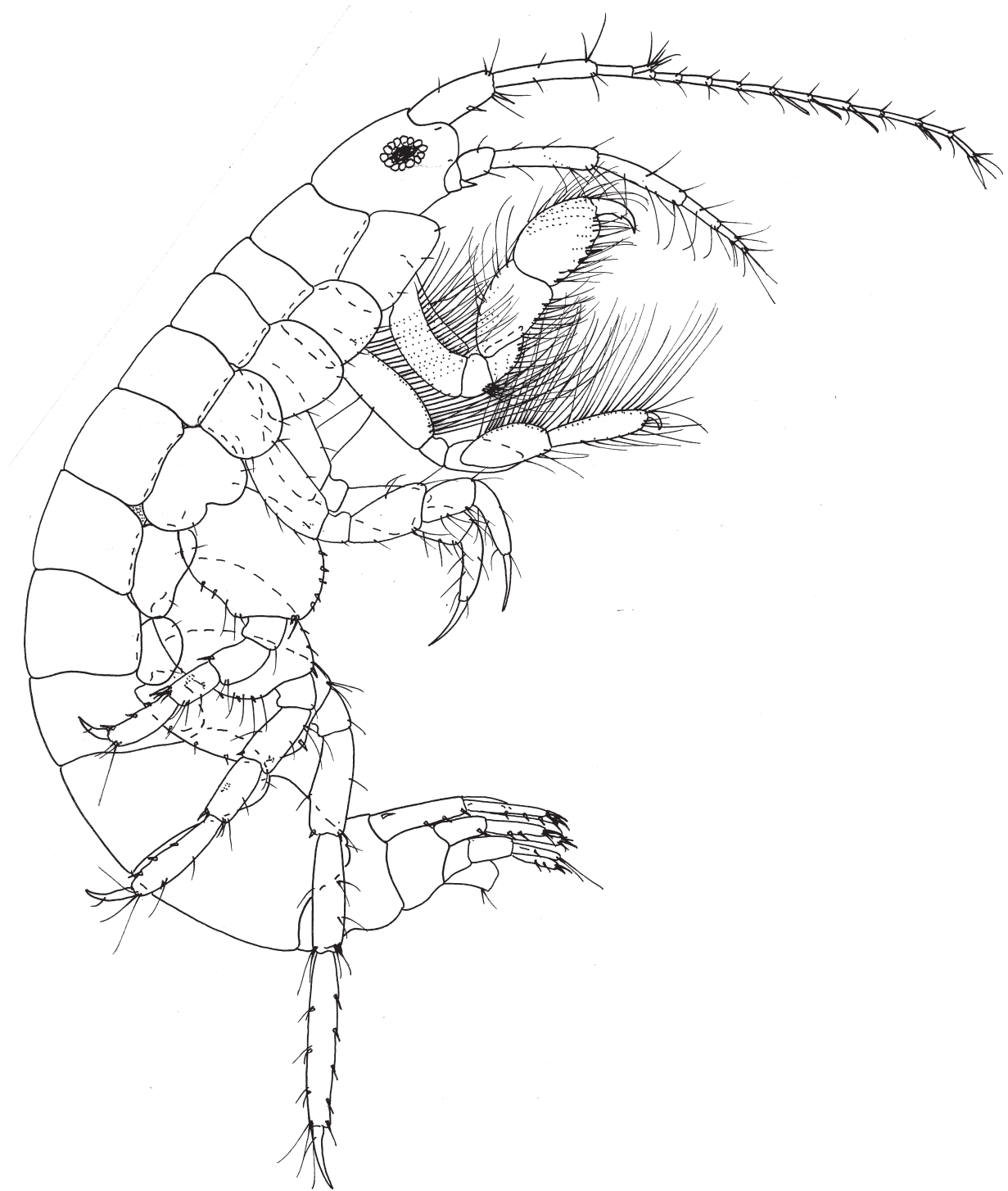
**Female** (sexually dimorphic characters). Based on female, 3.0 mm, AM P70739. *Gnathopod 1* carpus and propodus a little more slender than those of male; propodus palm evenly rounded; dactylus overlapping palm.

**Habitat.** *Udotea* over sand, seagrass, rubble, oyster shells.

**Remarks.** *Autonoe seurati* presents all the diagnostic features of the genus *Autonoe* Boeck, 1871. These are: mandibular palp posterodistal margin concave and with setae of more than two distinct lengths; male gnathopod 1 carpus subequal with propodus; uropod 3 peduncle moderately elongate, rami with marginal spines and no marginal setae. *Autonoe* resembles *Lembooides* Stebbing, 1895, but differs in the unshortened peduncle of uropod 3 and in having the male gnathopod 1 carpus subequal with the propodus. The genus *Autonoe* was, until now, considered to be restricted to the Atlantic Ocean (Myers, 1988). Its occurrence in Australian waters is therefore most unexpected, but the combination of characters is thought unlikely to be a homoplasy. The elongate, highly setose, filtering gnathopod 2 occurs as a convergent evolution in many aorid

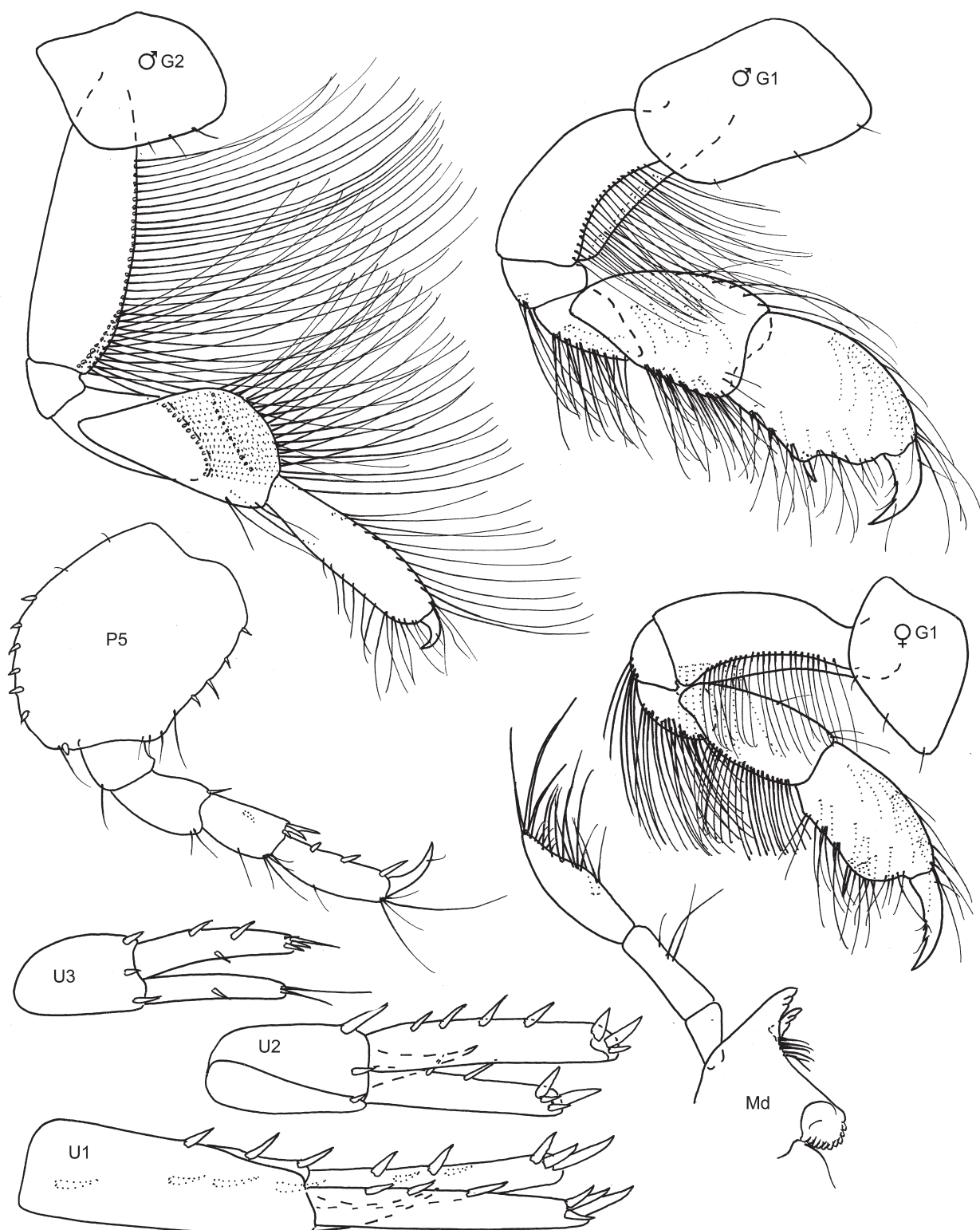
genera, viz *Bemlos* (*B. leptochirus* Walker, 1909), *Microdeutopus* (*M. versiculatus* Bate, 1857), *Lemboides* (*L. angusticarpa* Lyons & Myers, 1990). Within the Great Barrier Reef, *A. seurati* is easily recognised by its elongate, filtering (setose) gnathopod 2 in both sexes.

**Distribution.** *Australia.* Queensland: Lizard Island (current study); Western Australia (Moore 1988). *Gambier Islands* (Chevreux 1907). *Fiji.* Viti Levu (Schellenberg 1938). *New Caledonia.* Noumea (Ledoyer 1984).



**FIGURE 5.** *Autonoe seurati* Chevreux, 1907, male, 3.0 mm, AM P70696, Watsons Bay, Lizard Island, Great Barrier Reef.





**FIGURE 6.** *Autonoe seurati* Chevreux, 1907, male, 3.0 mm, female 3.2 mm, AM P70696, Watsons Bay, Lizard Island, Great Barrier Reef.

***Bemlos* Shoemaker, 1925**

***Bemlos aequimanus* (Schellenberg, 1938)**

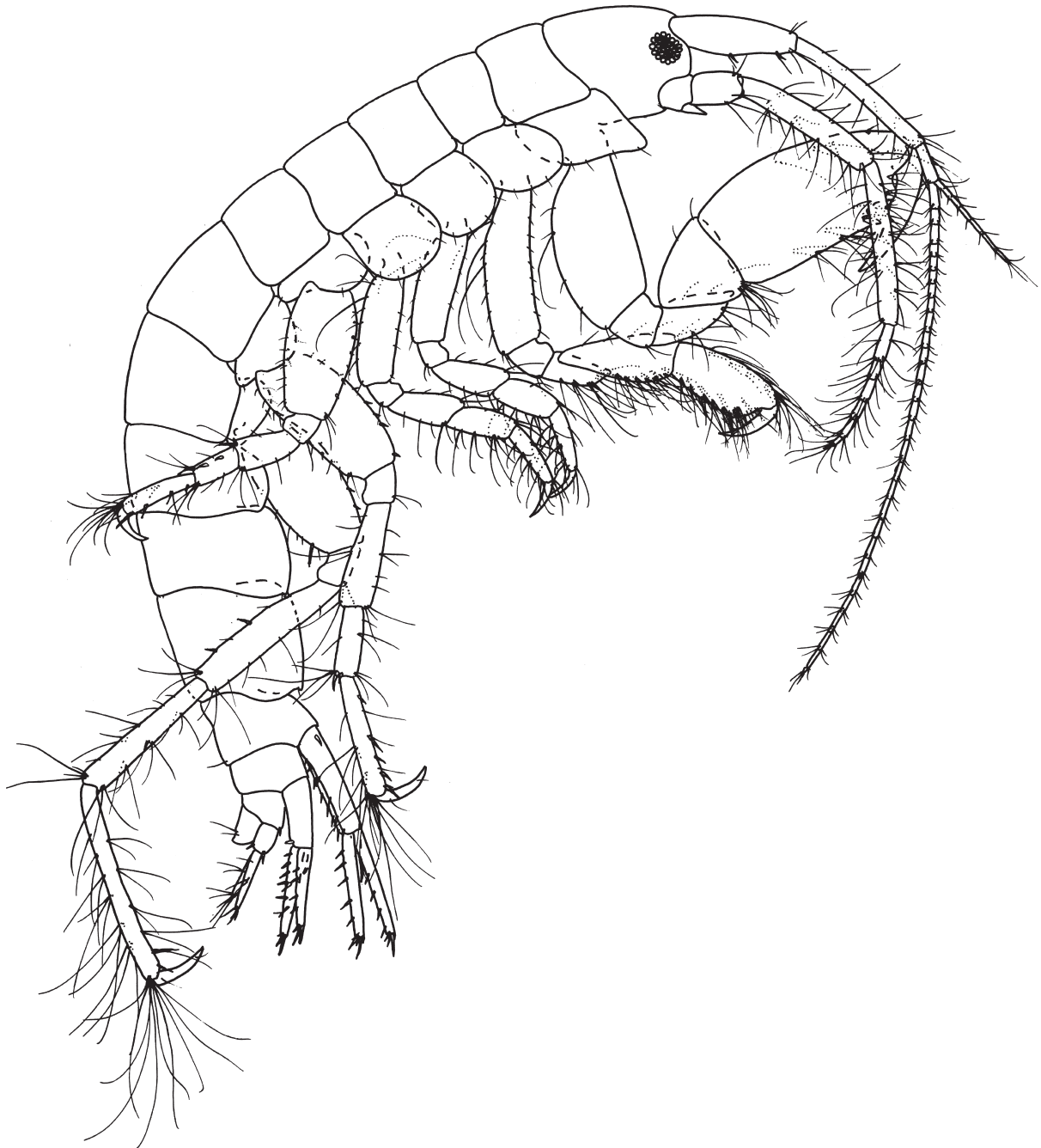
(Figs 7, 8)

*Bemlos aequimanus* (Schellenberg, 1938).

*Lembos aequimanus* Schellenberg, 1938b: 76, fig. 39. —J.L. Barnard, 1965: 527, fig. 26. —J.L. Barnard, 1970: 72, fig. 36a–e. —Ledoyer, 1984: 31, fig. 14. —Myers, 1985b: 385, figs 246–248.

*Bemlos aequimanus*. —Myers, 1988a: 188. —Myers, 1988b: 282. —Lowry & Stoddart, 2003: 67 (catalogue).

**Material examined.** 1 male, AM P77556 (JDT/LIZ 14); 1 unsexed, AM P75587 (QLD 1897); 1 unsexed, AM P75588 (QLD 1914); 2 unsexed, AM P75586 (QLD 1979).

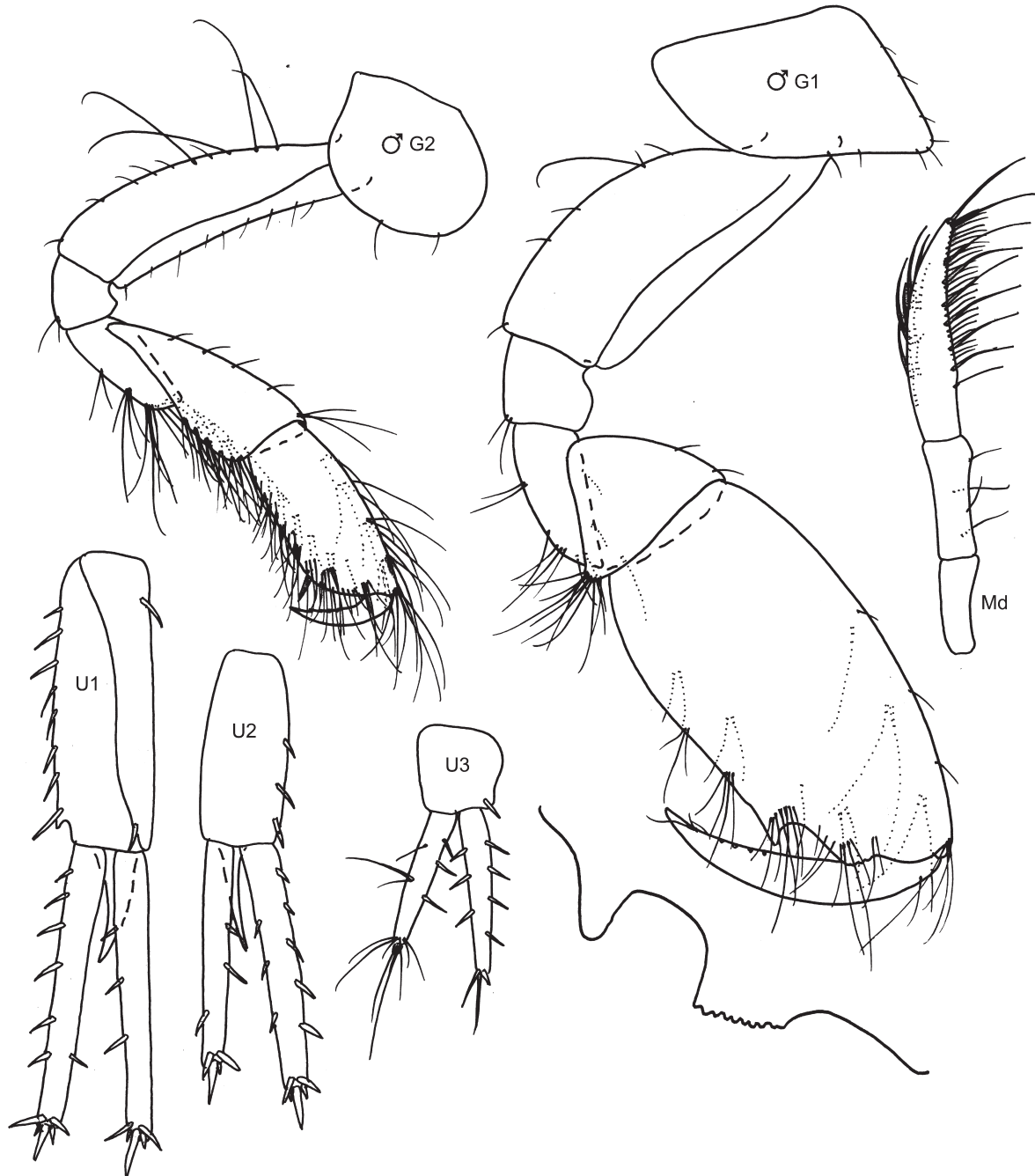


**FIGURE 7.** *Bemlos aequimanus* (Schellenberg, 1938), male, 7.0 mm, AM P77556, south of Lizard Head, Lizard Island, Great Barrier Reef.

**Type locality.** Apamama Atoll, Kiribati (as Gilbert Islands) ( $\sim 0^{\circ}24'0''\text{N } 173^{\circ}52'0''\text{E}$ ).

**Description.** Based on male, 7.0 mm, AM P77556.

**Head.** Head lateral cephalic lobes apically truncate. *Antenna 1* flagellum with 21 or more articles; accessory flagellum multiarticulate. *Antenna 2* with few long setae. *Lower lip* with fine setae only. *Maxilla 1* inner plate with 1 long pectinate apical seta. Mandible palp article 3 longer than 2, posterior margin straight with setae of two distinct lengths, long setae and an under-story of much shorter regularly spaced setae.



**FIGURE 8.** *Bemlos aequimanus* (Schellenberg, 1938), male, 7.0 mm, AM P77556, south of Lizard Head, Lizard Island, Great Barrier Reef.

**Pereon.** *Pereonites 2–3* with weak, apically rounded sternal spines. *Gnathopod 1* enlarged in males only; coxa anterodistally rounded; basis slender, much less than half as broad as long, with few or no setae present along margin, anterodistal margin with flange weak or absent; ischium anterior margin without flange; merus

not greatly elongated, fused along its entire length with carpus, posterior margin with sparse setae or setae absent, without posterodistal spine; carpus one third or less length of propodus, with setae sparse or absent, carpus without spines; propodus anterior margin moderately clothed in short setae, palm delimited from posterior margin, margin forming a broad excavate sinus, defined by strong posterodistal spine; dactylus more than half length of propodus, significantly overlapping palm. *Gnathopod 2* subchelate; basis anterior margin basis anterodistal margin with weak flange, weakly setiferous; carpus subequal with propodus, with short sparse setae; propodus with short dense setae. *Pereopod 3* basis anterior margin unexpanded, straight or weakly concave. *Pereopod 7* significantly less than 125% length of pereopod 6.

**Pleon.** *Epimeron 3* posterodistal margin produced into a small spine. *Uropod 1* distoventral spine one third length of peduncle. *Uropod 2* peduncle with distoventral spine one half length of peduncle. *Uropod 3* biramous, outer ramus a little shorter than inner ramus, inner ramus at least twice length of peduncle. Telson with fine setae only.

**Female** (sexually dimorphic characters). Not collected in the current survey.

**Habitat.** Among algae and phanerogammes in shallow water.

**Remarks.** The large size of this species is exceptional for this genus. Worldwide, only the closely related *B. teleporus* K.H. Barnard, 1955 from the western Indian Ocean is comparable in size. Together with size, the shape of the male gnathopod 1 distinguishes this species from all other Great Barrier Reef species of *Bemlos*.

**Distribution.** *Australia.* Queensland: south of Lizard Head Peninsula, Lizard Island (current study); Dingo Beach near Bowen Island (Myers 1988b). New South Wales: Twofold Bay (Myers 1988b; Hutchings, *et al.* 1989). Victoria: Crib Point (Myers 1988b). South Australia: Stokes Bay, Kangaroo Island (Myers 1988b). *Fiji.* Viti Levu (Schellenberg 1938; Myers 1985). *Kiribati.* Apamama Atoll (Schellenberg 1938). *New Caledonia.* l'îlot Maître (Ledoyer 1984). *USA.* Hawaii: Kawela Bay, Oahu (J.L. Barnard 1970).

### ***Bemlos australis* (Haswell, 1879)**

(Figs 9, 10)

*Microdeuteropus* (sic) *australis* Haswell, 1879: 271, pl. 11, fig. 5.

*Microdeutopus australis.* —Haswell, 1882: 263.

*Lemboides australis.* —Stebbing, 1899: 350. —Stebbing, 1906: 601.

*Bemlos australis.* —Myers, 1988a: 188. —Myers, 1988b: 278, figs 11–13. —Lowry & Stoddart, 2003: 67 (catalogue).

**Material examined.** 1 male, AM P70599 (QLD 1622); 2 males, 4 females, AM P70751 (QLD 1645); 1 male, 1 female, AM P70841 (QLD 1666); 1 male, 1 female, AM P70912 (QLD 1672), 1 male, AM P70934 (QLD 1688); 1 male, 1 female, AM P71335 (QLD 1778); 7 unsexed, AM P75576 (QLD 1900); many unsexed, AM P75577 (QLD 1922).

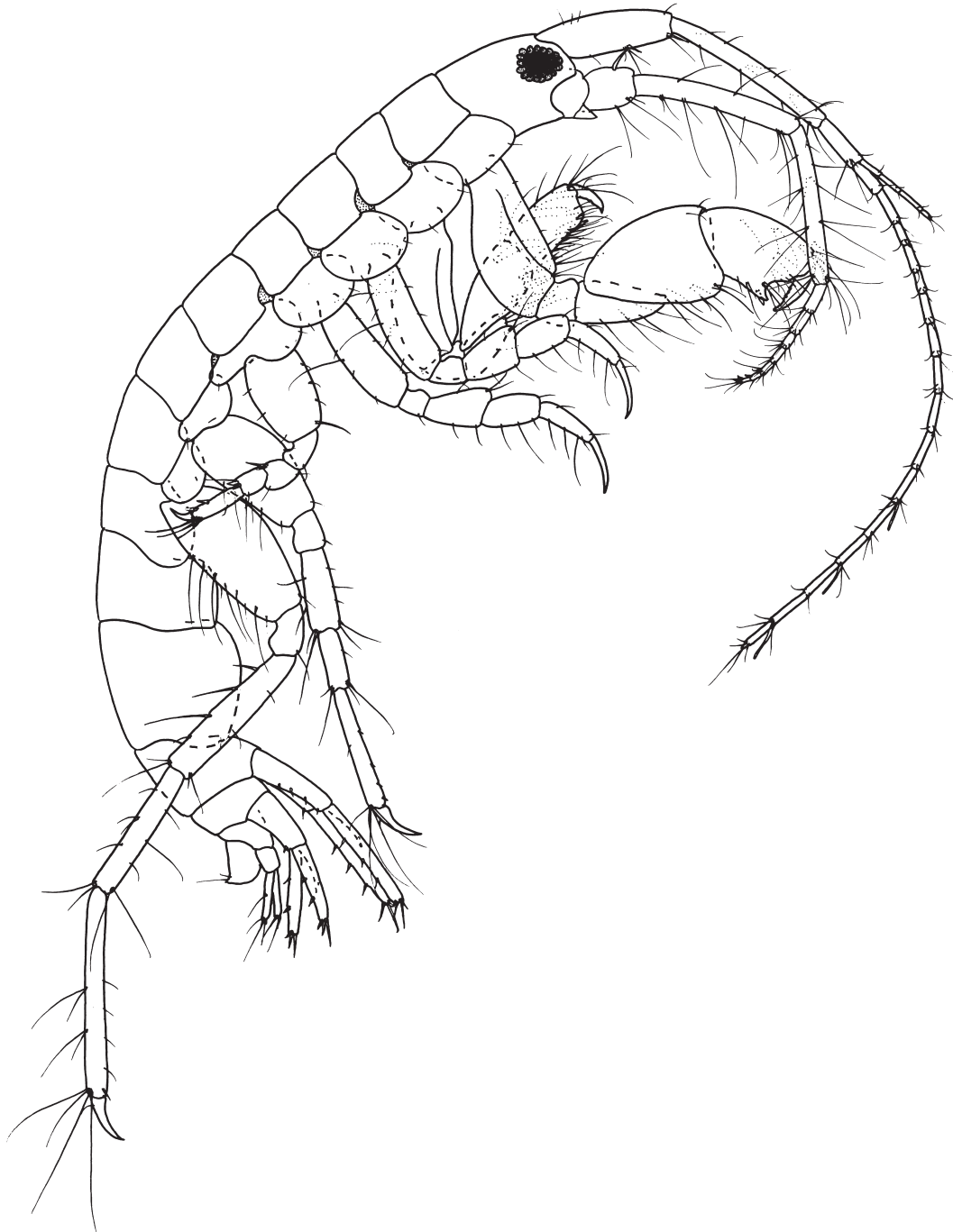
**Type locality.** Port Jackson, New South Wales, Australia (~33°52'S 151°13'E).

**Description.** Based on male, 4.0 mm, AM P70751.

**Head.** Head lateral cephalic lobes apically truncate. *Antenna 1* flagellum with 20 or less articles; accessory flagellum multiarticulate. *Antenna 2* with few long setae. *Lower lip* with fine setae and stout setae. *Maxilla 1* inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 longer than 2, posterior margin straight, with setae of two distinct lengths, long setae and an under-story of much shorter regularly spaced setae.

**Pereon.** *Pereonites* without sternal spines. *Gnathopod 1* enlarged in males only; coxa weakly produced anterodistally, rounded; basis robust, twice as long as broad, posterodistal margin with one long seta; ischium anterior margin without flange, posterior margin with few setae; merus not greatly elongated, fused along its entire length with carpus, posterior margin with few setae without posterodistal spine; carpus one and one half length of propodus, with few setae, anterior margin with no spine, without an oblique row of long setae on inner face, posterior margin without spines; propodus anterior margin moderately setiferous, posterior margin

straight, palm delimited from posterior margin, margin forming a broad excavate sinus, palm defined by strong posterodistal spine, without robust seta defining palm, with spine near base of dactylus, with subtriangular, apically subacute spine; dactylus less than half length of propodus, overlapping palm. *Gnathopod 2* subchelate; basis anterodistal margin with flange, posterodistal margin without robust setae; with few setae along length of basis; carpus and propodus subequal in length, with short sparse setae; propodus with short dense setae, without robust seta or spine defining palm. *Pereopod 3* without brush of long setae on merus. *Pereopod 6* basis not produced posterodistally. *Pereopod 7* more than 125% length of pereopod 6.



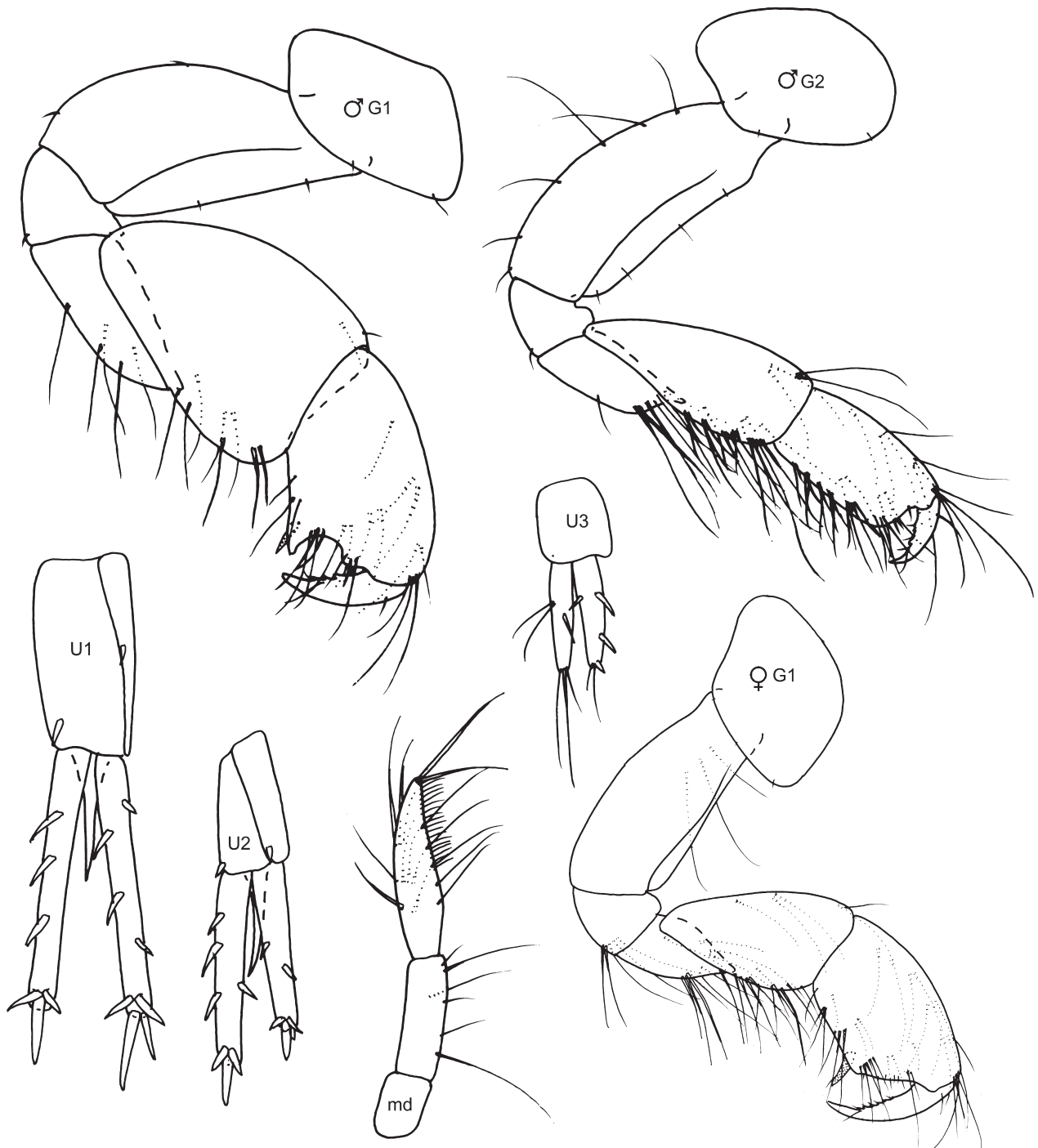
**FIGURE 9.** *Bemlos australis* (Haswell, 1879), male, 4.0 mm, AM P70912, Cobia Hole, Lizard Island, Great Barrier Reef.



**Pleon.** *Epimeron 3* posterodistal margin rounded. *Uropod 1* rami subequal, peduncle much longer than broad, distoventral spine shorter than peduncle. *Uropod 2* biramous; peduncle with distoventral spine equal in length with peduncle. *Uropod 3* biramous, rami subequal, inner ramus less than twice length of peduncle. *Telson* with distal fine setae only.

**Female** (sexually dimorphic characters). Based on female, 4.2 mm, AM P70751. *Gnathopod 1* carpus subequal in length with propodus; propodus palm defined by rounded corner, with robust seta defining palm; dactylus much more than half length of propodus. *Gnathopod 2* carpus shorter than propodus; propodus with robust seta defining palm.

**Habitat.** Among *Posidonia*, algae, in coral rubble, fine sands, on a breakwater.



**FIGURE 10.** *Bemlos australis* (Haswell, 1879), male 4.0 mm, female, 4.2 mm, AM P70912, Cobia Hole, Lizard Island, Great Barrier Reef.



**Remarks.** This species resembles *B. triangulum* Myers, 1988b, in male gnathopod 1 having the carpus longer than the propodus. It differs from that species however in its larger size, male gnathopod 1 with non-acute coxa, and uropod 2 with well developed distoventral spine.

**Distribution.** *Australia.* Queensland: Lizard Island (Myers 1988b; current study). New South Wales: Port Jackson (Haswell 1879), Twofold Bay (Myers 1988b).

***Bemlos bidens* Myers, 1988**  
(Figs 11, 12)

*Bemlos bidens* Myers, 1988b: 293, figs 24–25. —Lowry & Stoddart, 2003: 67 (catalogue).

**Material examined.** Not collected in the current survey.

**Type locality.** Great Detached Reef, near Raine Island, Queensland (11°43'S 144°03'E).

**Description.** Based on holotype, male, 4.0 mm, AM P37430 (Myers 1988b).

**Head.** Head lateral cephalic lobes apically truncate. *Antenna* 1–2 unknown. *Lower lip* with fine setae and stout setae. *Maxilla* 1 inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 longer than 2, posterior margin straight or weakly falcate, posterior margin with setae of two distinct lengths, long setae and an under-story of much shorter regularly spaced setae.

**Pereon.** *Pereonites* 2–4 with apically acute sternal spines. *Gnathopod* 1 coxa unproduced anterodistally, rounded; basis robust, twice as long as broad, posterodistal margin with few setae; ischium anterior margin without flange, posterior margin with one long seta; merus not greatly elongated, fused along its entire length with carpus, posterior margin with few setae, with acute posterodistal spine; carpus two thirds length of propodus, with few setae, anterior margin with no spine; without an oblique row of long setae on inner face, posterodistal margin with stout spine; propodus anterior margin moderately setiferous, posterior margin straight, palm delimited from posterior margin, margin entire, palm defined by subquadrate corner, with robust seta defining palm, without spine near base of dactylus; dactylus more than half length of propodus, significantly overlapping palm. *Gnathopod* 2 subchelate; basis anterodistal margin without flange, posterodistal margin without robust setae; with few setae along length of basis; carpus shorter than propodus, with short sparse setae; propodus with dense setae, palm with robust seta defining palm. *Pereopod* 3 without brush of long setae on merus. *Pereopod* 6 basis weakly produced posterodistally. *Pereopod* 7 150% length of pereopod 6.

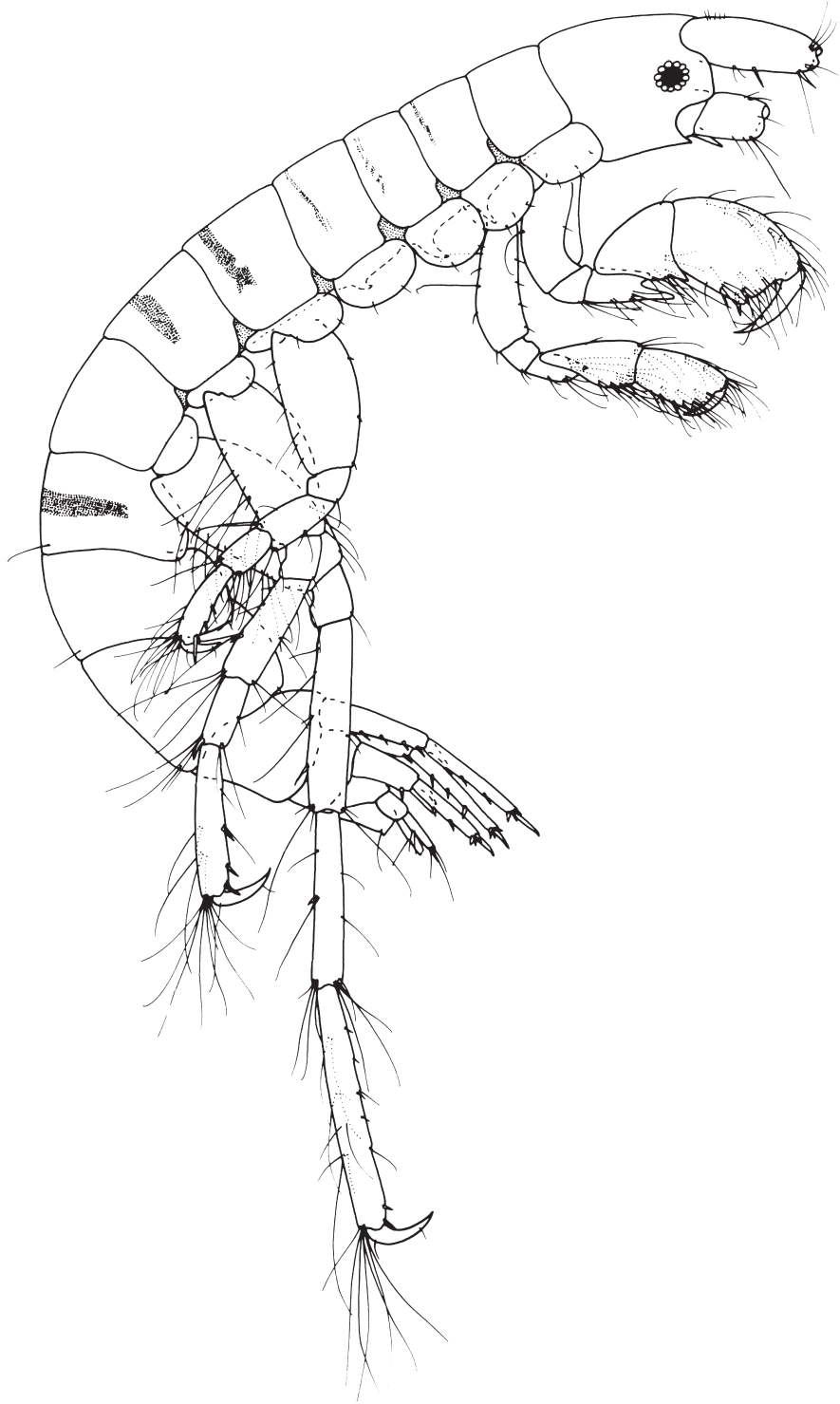
**Pleon.** *Epimeron* 3 posterodistal margin rounded. *Uropod* 1 rami subequal, peduncle much longer than broad, distoventral spine shorter than peduncle. *Uropod* 2 biramous; peduncle with distoventral spine shorter than peduncle. *Uropod* 3 biramous, inner ramus 1.5 x length of peduncle. *Telson* with distal fine setae only.

**Female.** Unknown

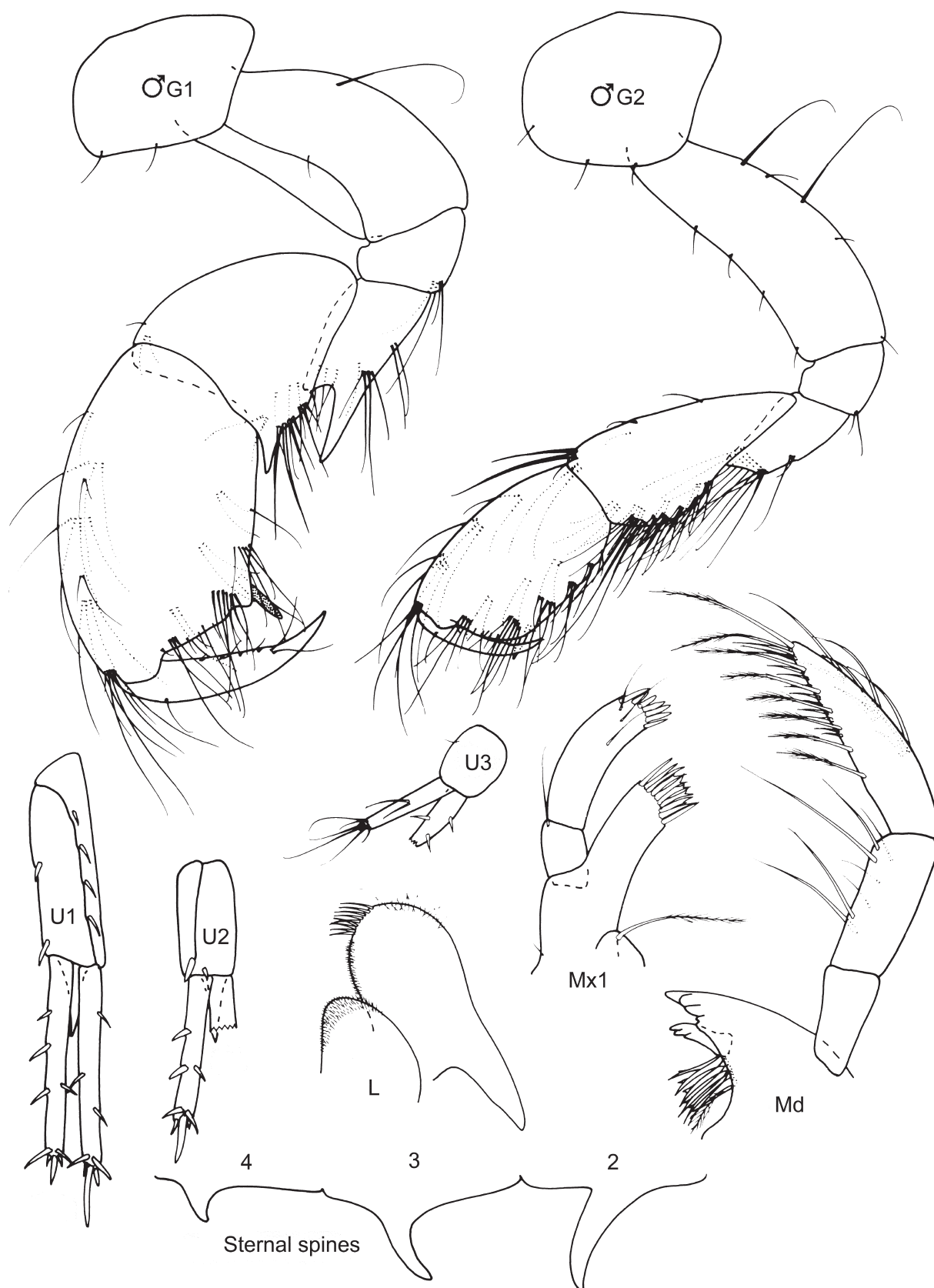
**Habitat.** Reef flat.

**Remarks.** This species is known from a single male (Myers 1988b). It is unique among Great Barrier Reef aorids in having a well developed spine on the posterodistal margin of both the merus and the carpus on the male gnathopod 1.

**Distribution.** *Australia.* Queensland: Great Detached Reef, near Raine Island, (Myers 1988b).



**FIGURE 11.** *Bemlos bidens* Myers, male 3.0 mm, AM P37430, Raine Island, Great Barrier Reef.



**FIGURE 12.** *Bemlos bidens* Myers, male 3.0 mm, AM P37430, Raine Island, Great Barrier Reef.

***Bemlos clypeatus* Krapp-Schickel & Myers, 2006**

(Figs 13, 14, Pl. 1H)

*Bemlos clypeatus* Krapp-Schickel & Myers, 2006: 1084, fig. 2.

*Bemlos saloteae* —Myers, 1988b: 288, figs 15–16 (not *Lembos saloteae* Myers, 1985c: 373, figs 238–241).

**Material Examined.** 1 male, AM P70556 (QLD 1618); 1 male, AM P70642 (QLD 1621); 1 male, 3 female, 3 juveniles, AM P70711 (QLD 1637); 3 males, 9 females, 4 juveniles, AM P71145 (QLD 1707); 1 male, 2 females, AM P71077 (QLD 1731); 1 male, 1 female, AM P71227 (QLD 1773); 1 male, 1 female, AM P71229 (QLD 1773).

**Type locality.** Sanur, Bali, Indonesia (~8°40'30"S 115°15'40"E).

**Description.** Based on male, AM P71145, 4.0 mm.

**Head.** Head lateral cephalic lobes apically truncated. *Antenna 1* flagellum with 20 or less articles; accessory flagellum multiarticulate. *Antenna 2* with few long setae. *Lower lip* with fine setae and stout setae. *Maxilla 1* inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 posterior margin straight or weakly falcate, longer than 2, posterior margin with setae of two distinct lengths, long setae and an under-story of much shorter regularly spaced setae.

**Pereon.** *Pereonites 2–4*, with apically acute sternal spines. *Gnathopod 1* enlarged in males only; coxa anterodistally rounded; basis robust, half or more as broad as long, with few or no setae present along margin, with setae sparse or absent, anterodistal margin with flange weak or absent; ischium anterior margin without flange; merus not greatly elongated, fused along its entire length with carpus, posterior margin with setae sparse or absent, without posterodistal spine; carpus one third or less length of propodus, without spines and with setae sparse or absent; propodus anterior margin moderately clothed in short setae, palm delimited from posterior margin and forming a narrow sinus, defined by strong posterodistal spine; dactylus more than half length of propodus, significantly overlapping palm. *Gnathopod 2* basis anterior margin concave. anterodistal margin with strong spine, posterodistal margin without robust setae; basis anterior margin weakly setiferous, with few or no long setae; carpus subequal with or shorter than propodus, with short sparse setae; propodus with long sparse setae. *Pereopod 3* basis anterior margin strongly expanded, convex. *Pereopod 7* significantly greater than 125% length of pereopod 6.

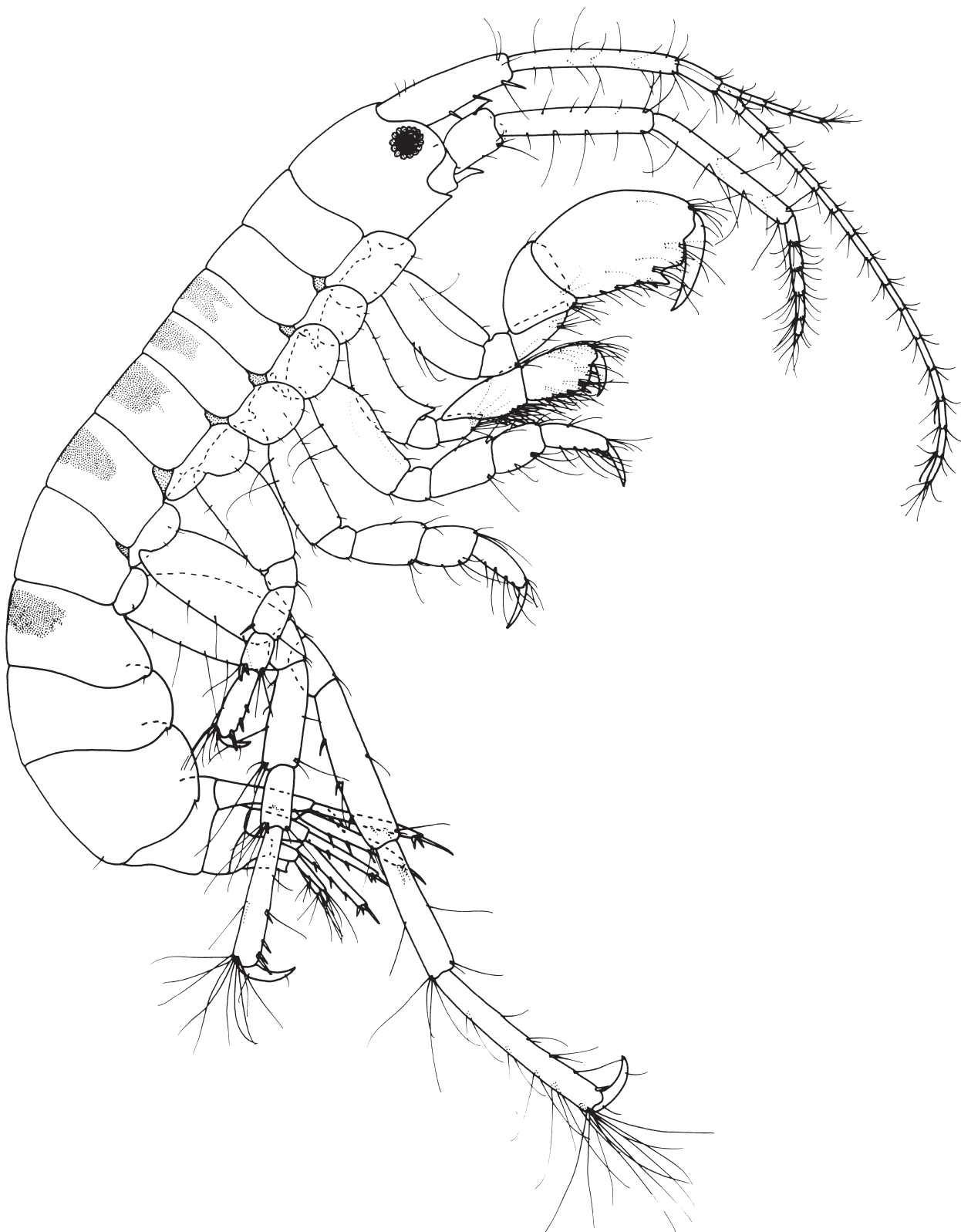
**Pleon.** *Epimeron 3* posterodistal margin with a small notch. *Uropod 1* distoventral spine shorter than peduncle. *Uropod 2* peduncle with distoventral spine. *Uropod 3* biramous, outer ramus more than half length of inner ramus, inner ramus at least twice length of peduncle.

**Female** (sexually dimorphic characters). Based on female, 4.5 mm, AM P71145. *Gnathopod 1* carpus two thirds or less length of propodus; palm defined by rounded or oblique corner. *Gnathopod 2* basis anterior margin sub-straight, anterodistal margin without spine.

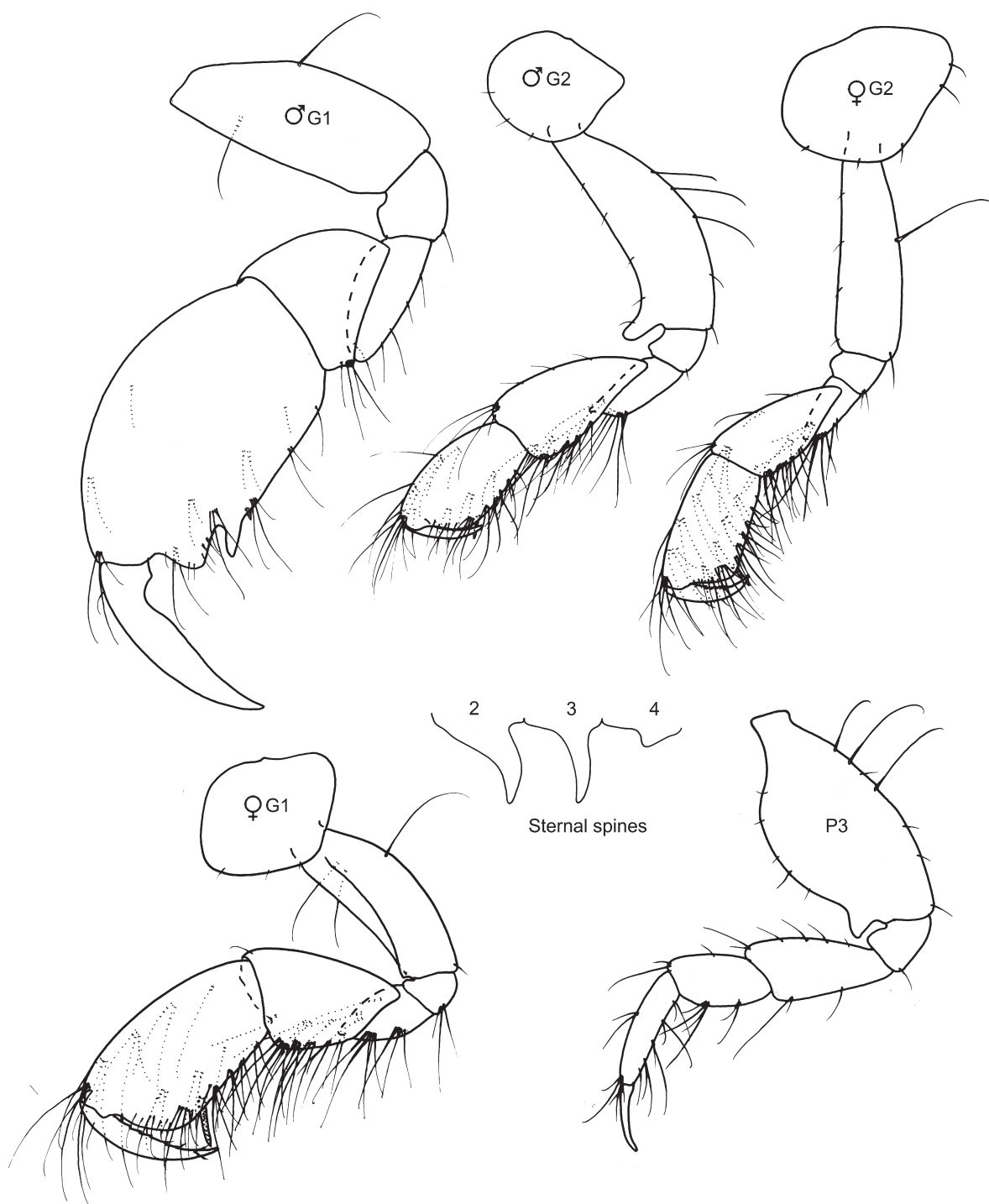
**Habitat.** Among algae.

**Remarks.** This species closely resemble *B. saloteae* (Myers, 1985c) from Tonga. It differs in the expanded basis of the male pereopod 3 in hyperadult males, in the less ovoid propodus of the male gnathopod 1, the less elongate gnathopod 2 and in the less curved sternal processes of the male, which are restricted to segments 2–4. The long finger-like rounded process on the anterodistal margin of the male gnathopod 2 basis, distinguishes this species from other Great Barrier Reef *Bemlos* species.

**Distribution.** *Australia.* Queensland: Lizard Island (Myers 1988b, current study). *Indonesia:* Sanur, Bali (Krapp-Schickel & Myers 2006).



**FIGURE 13.** *Bemlos clypeatus* Krapp-Schickel & Myers, male, 4.0 mm, AM P71145, 500 m north-east of North Point, Lizard Island, Great Barrier Reef.



**FIGURE 14.** *Bemlos clypeatus* Krapp-Schickel & Myers, 2006, male, 4.0 mm, female 4.5 mm, AM P71145, 500 m north-east of North Point, Lizard Island, Great Barrier Reef.

***Bemlos ehippium* Myers, 1988**

(Figs 15,16, Pl. 2A)

*Bemlos ehippium* Myers, 1988b: 275, figs 7–10.

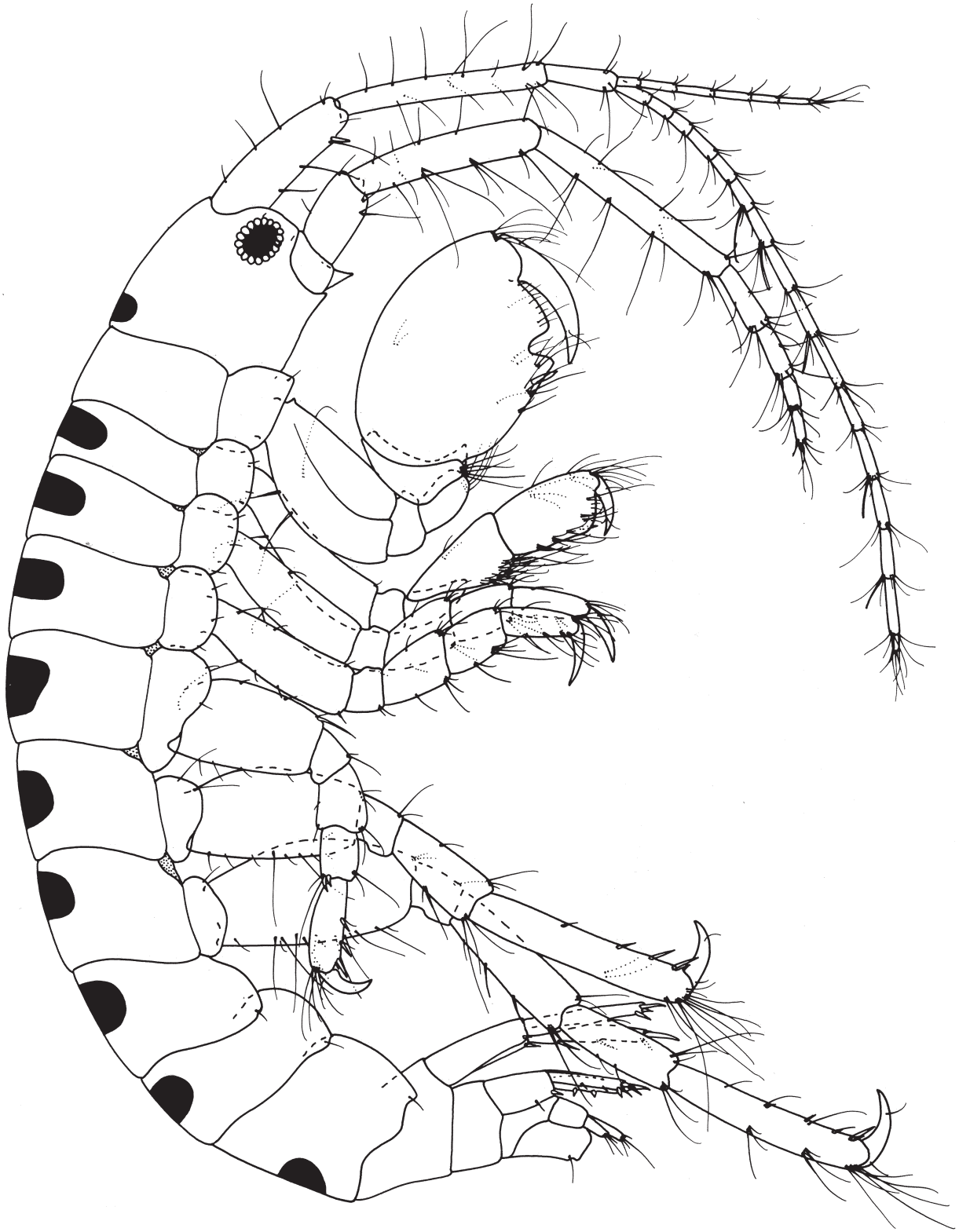
*Bemlos ehippium disjuncta* Myers, 1988b: 278, fig. 10. —Lowry & Stoddart, 2003: 68 (catalogue).



**Material examined.** 1 female AM P70975 (QLD 1684); 1 female, AM P70831 (QLD 1687); 1 male, 1 female, AM P70962 (QLD 1687).

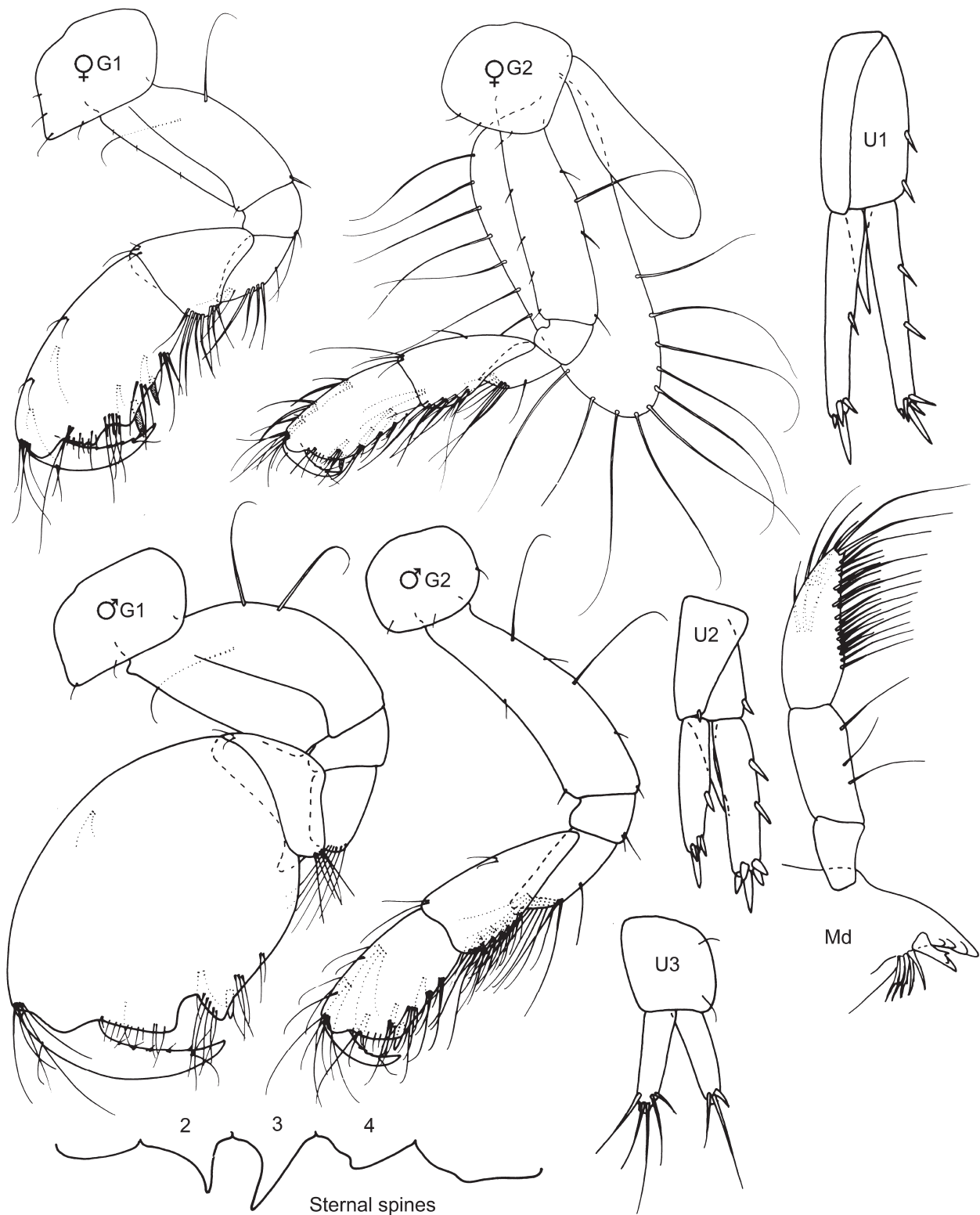
**Type locality.** Blue Lagoon, Lizard Island, Queensland, Australia (~14°41'S 145°27'E).

**Description.** Based on holotype, male, 2.8 mm, AM P37407 (Myers, 1988b).



**FIGURE 15.** *Bemlos ephippium* Myers, 1988b, male, 2.8 mm, AM P37407, Blue Lagoon, Lizard Island, Great Barrier Reef.

**Head.** Head lateral cephalic lobes apically truncate. *Antenna 1* flagellum with about 16 articles; accessory flagellum multiarticulate. *Antenna 2* with few long setae. *Lower lip* with fine setae and stout setae. *Maxilla 1* inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 longer than 2, posterior margin weakly falcate, posterior margin with setae of two distinct lengths, long setae and an under-story of shorter regularly spaced setae.



**FIGURE 16.** *Bemlos ephippium* Myers, 1988b, male, 2.8 mm, AM P37407, Blue Lagoon, Lizard Island, female, 3.0 mm, AM P37408, between Bird Island and South Island, Lizard Island, Great Barrier Reef.

**Pereon.** *Pereonites* 2–4 with sternal spines, apically acute on segments 2–3. *Gnathopod* 1 enlarged in males only; coxa weakly produced anterodistally, sub-acute; basis robust, half or more as broad as long, without a spine, posterodistal margin with two long setae, anterodistal margin with strong flange; ischium anterior margin without flange, posterior margin without setae; merus not greatly elongated, fused along its entire length with carpus, posterior margin without posterodistal spine; carpus one quarter length of propodus, anterior margin with few setae; anterior margin without spine; without an oblique row of long setae on inner face, posterior margin without spines; propodus anterior margin weakly setiferous, posterior margin evenly convex, palm present, delimited from posterior margin, margin forming a broad excavate sinus, palm defined by strong posterodistal spine, with robust seta defining palm, without spine near base of dactylus; dactylus more than half length of propodus, fitting palm. *Gnathopod* 2 subchelate; basis anterodistal margin without flange, posterodistal margin without robust setae and with few fine setae; merus not enlarged or produced away from carpus; carpus longer than propodus, anterior margin not lobate, anterior margin with short sparse setae; propodus with short dense setae, palm with robust seta defining palm. *Pereopod* 3 without brush of long setae on merus. *Pereopod* 6 basis not produced posterodistally. *Pereopod* 7 significantly less than 125% length of pereopod 6.

**Pleon.** *Epimeron* 3 posterodistal margin produced into a small spine. *Uropod* 1 rami subequal, peduncle much longer than broad, distoventral spine shorter than peduncle. *Uropod* 2 biramous; peduncle with distoventral spine subequal in length with peduncle. *Uropod* 3 biramous, rami subequal, inner ramus subequal with length of peduncle. *Telson* with distal fine setae only.

**Female** (sexually dimorphic characters). Based on paratype female, 3.0 mm, AM P37408 (Myers, 1988b). Sternal spines absent. *Gnathopod* 1 carpus less than two thirds length of propodus; palm with distal shallow excavation, defined by robust seta; dactylus overlapping palm.

**Habitat.** Rubble, algal turf, *Ecklonia radiata* holdfasts, *Sargassum* sp., *Jania*.

**Remarks.** The dorsal pigmentation of this species is unique in the genus.

**Distribution.** *Australia*. Queensland: Lizard Island (Myers 1988b and current study); New South Wales: Broom Heads, Byron Bay, Woolgoolga (Myers 1988b); Western Australia: Ned's Camp, Cape Range National Park (Myers 1988b).

### ***Bemlos gladius* sp. nov.**

(Figs 17, 18)

**Type material.** Holotype, male, 3.2 mm, AM P71519, Yonge Reef, Half Mile Opening (14°34'19"S, 145°36'51"E), in green alga *Halimeda opuntia*, by hand on SCUBA, 9 m, O. Coleman, 5 March 2005 (QLD 1827). Paratypes: 1 male, 3 females, same data as holotype, AM P71568 (QLD 1829).

**Type locality.** Yonge reef, Lizard Island, Queensland, Australia (14°34'19"S, 145°36'51"E).

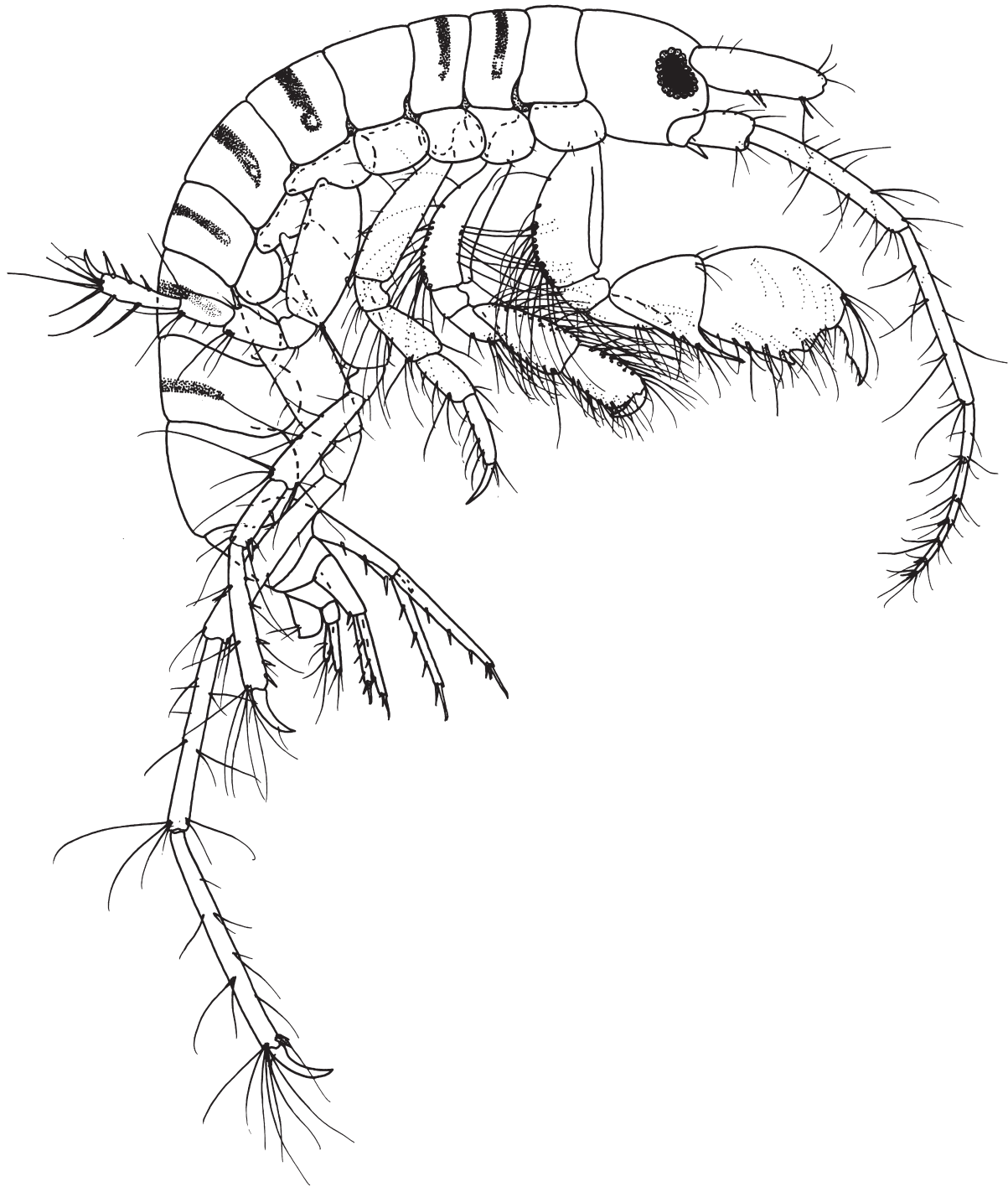
**Etymology.** From the latin 'gladius' = sword, referring to the long spine on the carpus of the male gnathopod 1.

**Description.** Based on holotype, male, 3.2 mm, AM P71519.

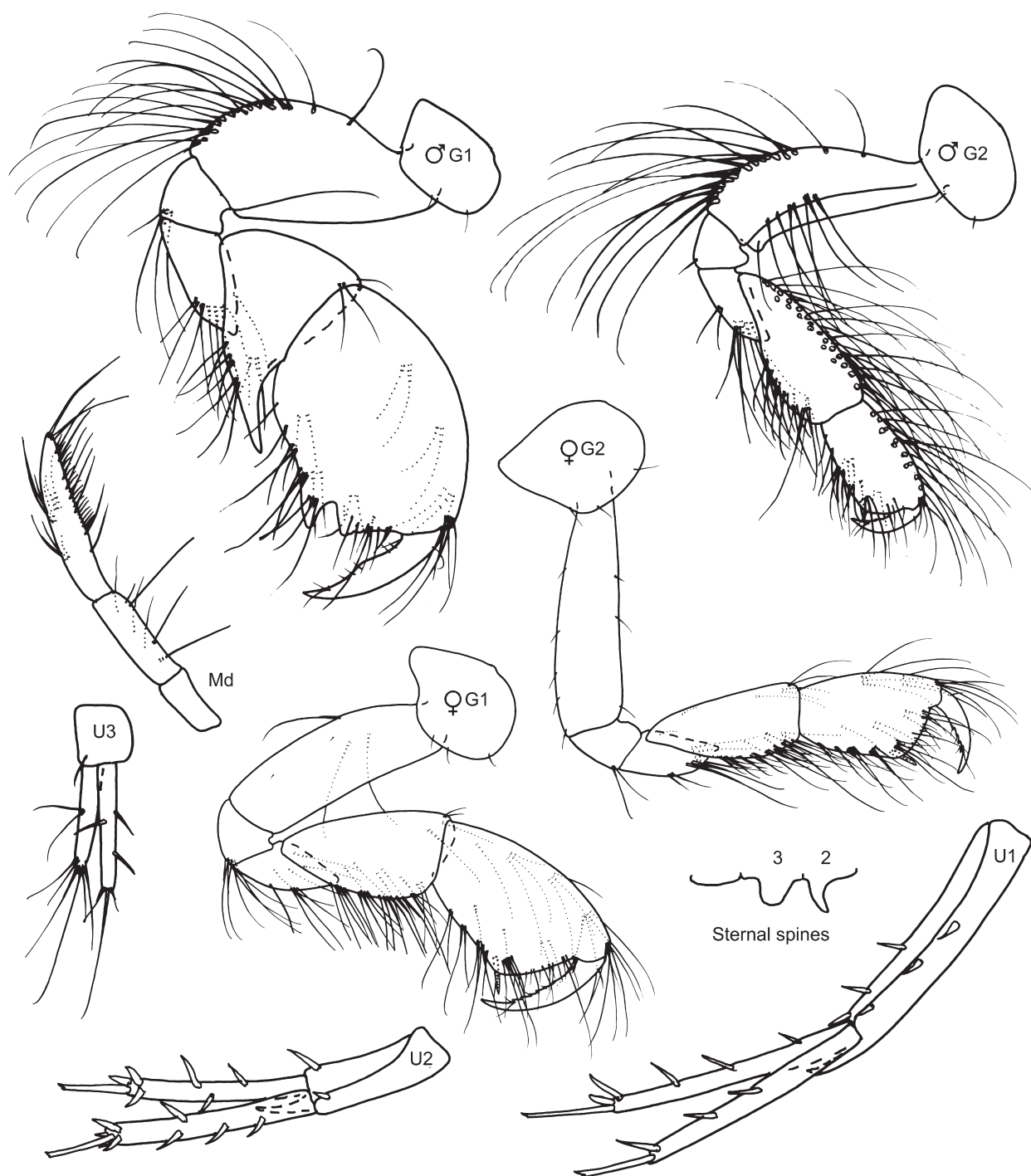
**Head.** Head lateral cephalic lobes apically truncate. *Antenna* 1 flagellum unknown. *Antenna* 2 with few long setae. *Lower lip* with fine setae and stout setae. *Maxilla* 1 inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 longer than 2, posterior margin straight, posterior margin with setae of two distinct lengths, long setae and an under-story of much shorter regularly spaced setae.

**Pereon.** *Pereonites* 2–3 with sternal spines, apically acute on segment 2, rounded on segment 3. *Gnathopod* 1 coxa weakly produced anterodistally, rounded; basis robust, less than twice as long as broad, posterodistal margin with brush of dense long setae; ischium anterior margin without flange, posterior margin with a few long setae; merus not greatly elongated, fused along its entire length with carpus, posterior margin with few setae, without spine; carpus one half length of propodus, with few setae, anterior margin with no spine; without an oblique row of long setae on inner face, posterodistal margin with long, slender spine;

propodus anterior margin weakly setiferous, posterior margin sinuous, palm present, delimited from posterior margin, forming a v-shaped sinus, with strong posterodistal spine, without spine near base of dactylus; dactylus more than half length of propodus, overlapping palm. *Gnathopod 2* subchelate; basis anterior margin straight but with weak distal concavity, anterodistal margin with weak flange, posterodistal margin with a dense brush of long setae; carpus longer than propodus, with dense long setae; propodus with dense long setae, palm with robust defining seta. *Pereopod 3* basis unexpanded, without brush of long setae on merus. *Pereopod 6* basis weakly produced posterodistally. *Pereopod 7* 150% length of pereopod 6.



**FIGURE 17.** *Bemlos gladius* **sp. nov.**, holotype, male, 3.2 mm, AM P71519, Yonge Reef, Lizard Island, Great Barrier Reef.



**FIGURE 18.** *Bemlos gladius* sp. nov., holotype, male, 3.2 mm, AM P71519, female 3.2 mm, AM P71568, Yonge Reef, Lizard Island, Great Barrier Reef.

**Pleon.** *Epimeron* 3 posterodistal margin with small notch bearing a seta. *Uropod* 1 rami subequal, peduncle much longer than broad, distoventral spine one quarter length of peduncle. *Uropod* 2 biramous; peduncle with distoventral spine almost half length of peduncle. *Uropod* 3 biramous, inner ramus more than 2 x length of peduncle. *Telson* with distal fine setae only.

**Female** (sexually dimorphic characters). Based on paratype female, 3.1 mm, AM P71568. Sternal spines absent. *Gnathopod* 1 basis relatively slender, about 3 x as long as broad, without a brush of setae on the



posterodistal margin; carpus a little shorter than propodus, lacking a posterodistal spine; propodus palm defined by a rounded corner and a stout robust seta; dactylus overlapping palm. *Gnathopod 2* basis slender, anterior margin fully straight, carpus and propodus subequal in length, both lacking dense long setae on the anterior margins.

**Habitat.** Among *Halimeda opuntia* in shallow water.

**Remarks.** This species is very close to *Bemlos longisetis* Ren, 2006, in having a long spine on the posterodistal margin of the male gnathopod 1 carpus. It differs from that species, however, in lacking additional short spines on the posterior margin of the carpus of that appendage (present in *B. longisetis*), and also in having a dense brush of long setae on the posterodistal margin of the basis of the male gnathopod 2 (lacking in *B. longisetis*). It also resembles *Bemlos delicatissima* Myers (2002) from Phuket, Thailand. It differs in having a dense brush of long setae on the posterodistal margin of the basis of the male gnathopod 1 which is absent in *B. delicatissima*. The male gnathopod 1 basis is also more robust in *B. gladius*, being less than twice as long as broad, whereas in *B. delicatissima* it is much more than twice as long as broad. It also resembles *B. pseudopunctatus* (Ledoyer, 1978) from the Mascarenes, but in that species, male gnathopod 2 has a small meral spine and lacks the brush of long setae on the basis. *Bemlos pseudopunctatus* also has acute sternal spines on segments 2–4.

**Distribution.** *Australia*. Queensland: Lizard Island (current study).

### ***Bemlos mollis* Myers, 1988**

(Figs 19, 20)

*Bemlos mollis* Myers, 1988b: 271, figs 4–6. —Lowry & Stoddart, 2003: 68 (catalogue).

**Material examined.** 1 male, AM P70753 (QLD 1648); 1 female, AM P71464 (QLD 1794).

**Type locality.** Blue Lagoon, Lizard Island, Queensland, Australia (~14°41'S 145°27'E).

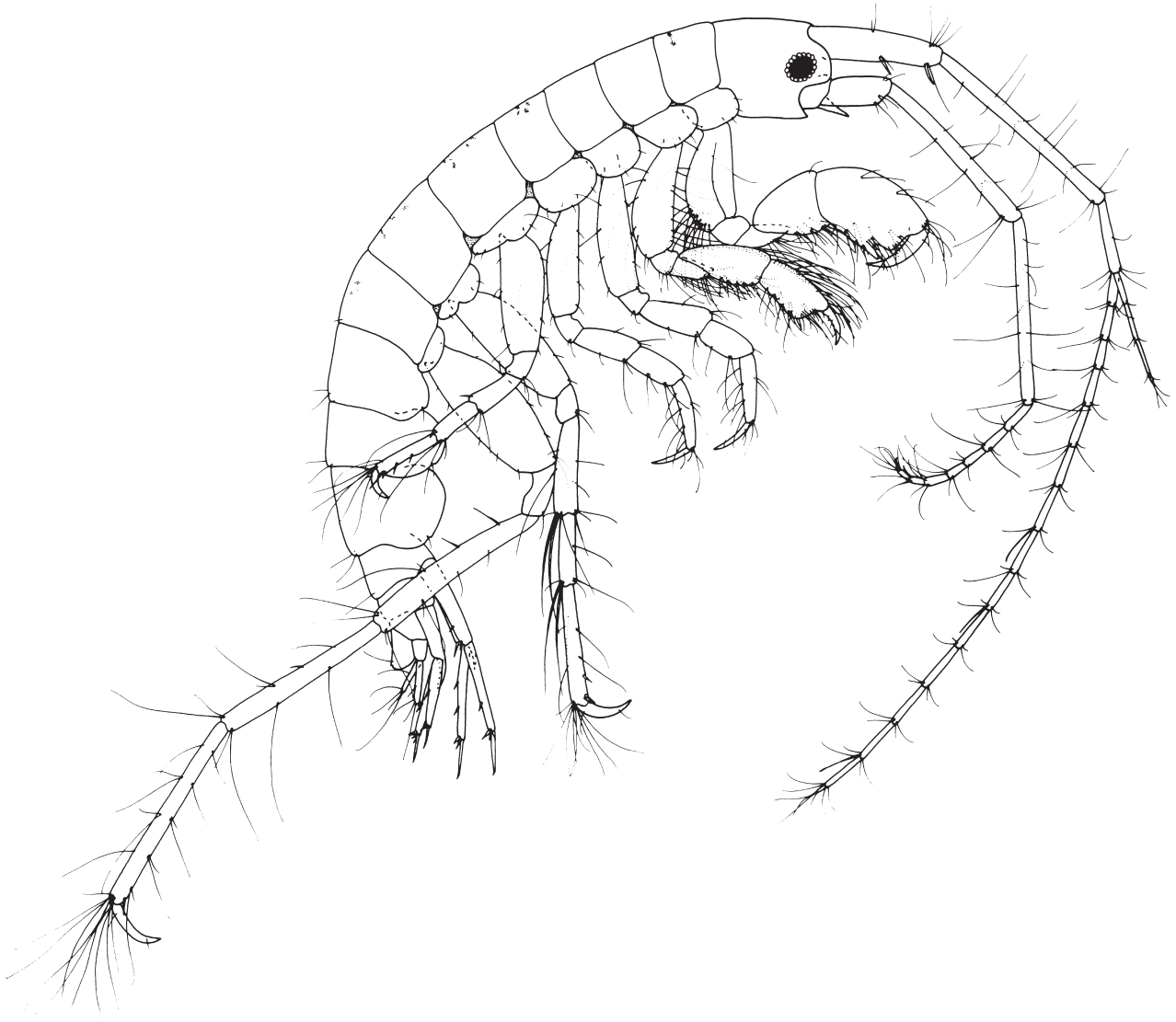
**Description.** Based on holotype, male, 3.0 mm, AM P37403.

**Head.** Head lateral cephalic lobes apically truncate. *Antenna 1* flagellum with about 15 articles; accessory flagellum multiarticulate. *Antenna 2* with few long setae. *Lower lip* with fine setae and stout setae. *Maxilla 1* inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 longer than 2, posterior margin straight with setae of two distinct lengths, long setae and an under-story of much shorter regularly spaced setae.

**Pereon.** *Pereonites 2–4* with apically acute sternal spines. *Gnathopod 1* enlarged in males only; coxa unproduced anterodistally; basis robust, half as broad as long, posterodistal margin with brush of very long setae, anterodistal margin with strong flange; ischium anterior margin without flange; merus not greatly elongated, fused along its entire length with carpus, posterior margin without posterodistal spine; carpus two thirds length of propodus; posterior margin without spines; propodus anterior margin weakly setiferous, posterior margin straight, palm present, delimited from posterior margin, forming a narrow sinus, palm defined by strong posterodistal spine, with robust seta defining palm, without spine near base of dactylus; dactylus more than half length of propodus, overlapping palm. *Gnathopod 2* subchelate; basis anterodistal margin without flange, posterodistal margin without robust setae; with few long setae along its length; merus posterior margin with very long setae; carpus longer than propodus, anterior margin not lobate, with long dense setae; propodus with long dense setae, palm with robust seta defining palm. *Pereopod 3* without brush of long setae on merus. *Pereopod 6* basis not produced posterodistally. *Pereopod 7* significantly greater than 125% length of pereopod 6.

**Pleon.** *Epimeron 3* posterodistal margin rounded. *Uropod 1* rami subequal, peduncle much longer than broad, distoventral spine one quarter length of peduncle. *Uropod 2* biramous; peduncle with distoventral spine a little less than half length of peduncle. *Uropod 3* biramous, rami unequal in length, inner ramus more than twice length of peduncle. *Telson* with distal fine setae only.





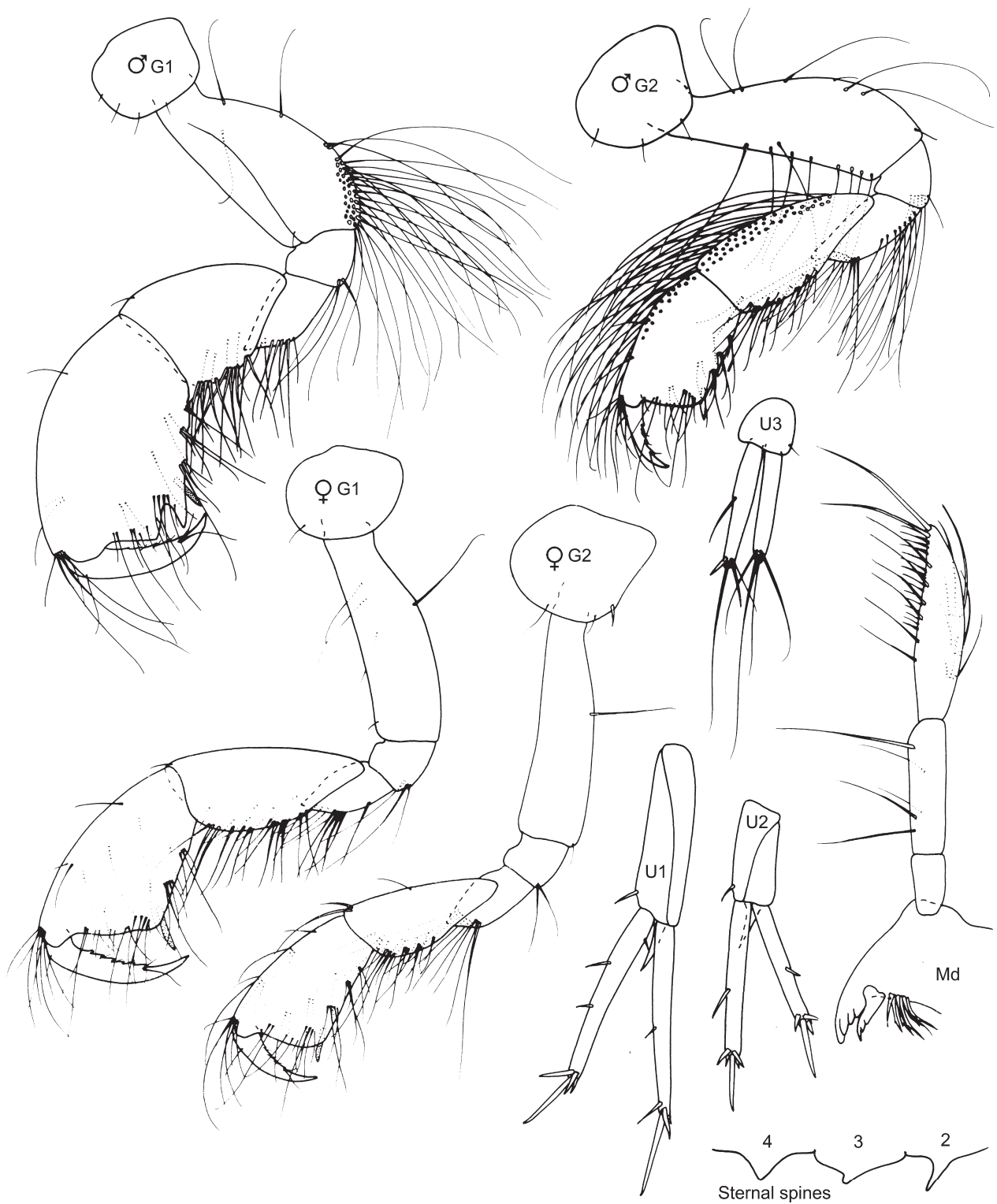
**FIGURE 19.** *Bemlos mollis* Myers, 1988b, male, 3.0 mm, AM P37403, Blue Lagoon, Lizard Island, Great Barrier Reef.

**Female** (sexually dimorphic characters). Based on paratype, female, 3.0 mm, AM P37404 (Myers, 1988b). Sternal spines absent. *Gnathopod 1* basis slender, much less than half as broad as long, anterodistal margin with flange absent; carpus subequal in length with propodus; propodus palm defined by rounded corner. *Gnathopod 2* carpus subequal with propodus.

**Habitat.** Among algal turf and reef rubble.

**Remarks.** *Bemlos mollis* is a very fragile aorid with elongate and slender appendages. It resembles the more robust *B. gladius* in the setose basis of the male gnathopod 1, but lacks the spine that occurs on the male gnathopod 1 carpus of that species.

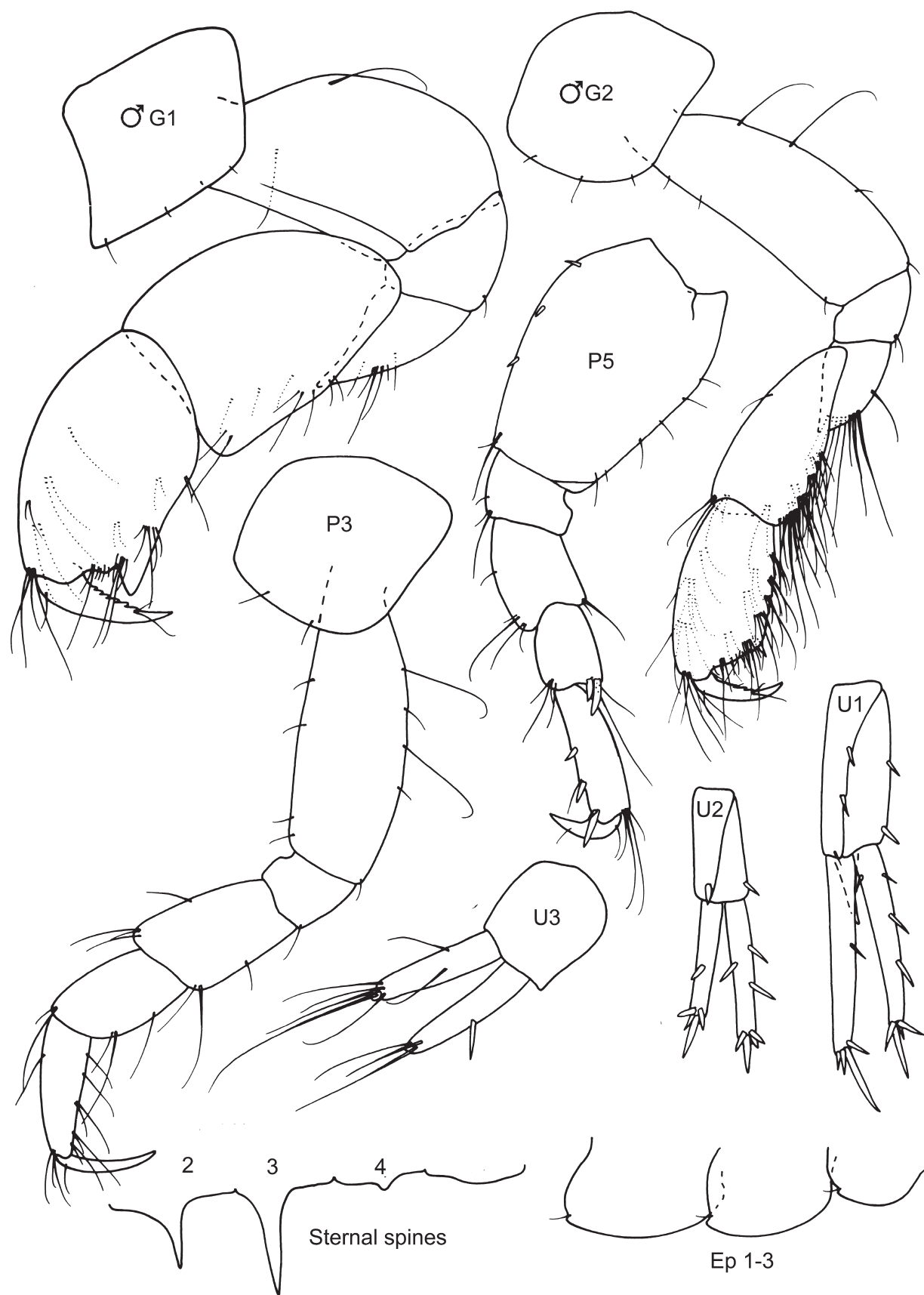
**Distribution.** *Australia.* Queensland: Lizard Island (Myers 1988b and current study).



**FIGURE 20.** *Bemlos mollis* Myers, 1988b, male, 3.0 mm, AM P37403, Blue Lagoon, Lizard Island, female, 3.0 mm, AM P37404, North Point, Lizard Island, Great Barrier Reef.

***Bemlos triangulum* Myers, 1988**  
(Figs 21, 22)

*Bemlos triangulum* Myers, 1988b: 291, figs 22–23. —Lowry & Stoddart, 2003: 69 (catalogue).



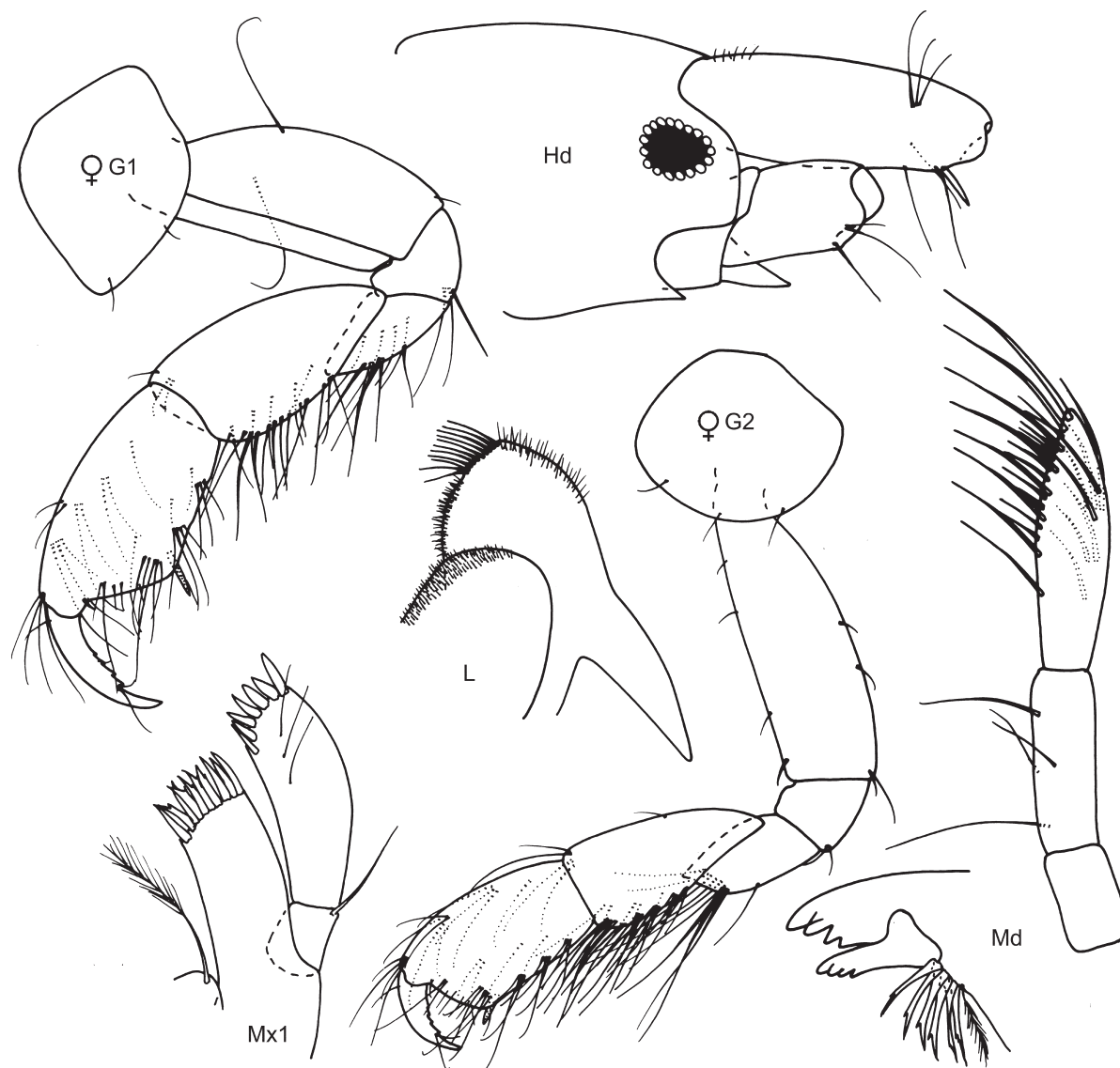
**FIGURE 21.** *Bemlos triangulum* Myers, 1988b, male, 4.0 mm, AM P37428, Sandbank Reef, north Queensland, female, 4.0 mm, AM P37429, Sandbank Reef, north Queensland.

**Material examined.** Not collected in the current study.

**Type locality.** Sandbank Reef, northern Queensland, Australia (13°45'S 144°16'E).

**Description.** Based on holotype, male, 4.0 mm, AM P37428.

**Head.** Head lateral cephalic lobes apically truncate. *Antenna 1* and *Antenna 2* unknown. *Lower lip* with fine setae and stout setae. *Maxilla 1* basal inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 longer than 2, posterior margin weakly convex, with setae of more than two distinct lengths.



**FIGURE 22.** *Bemlos triangulum* Myers, 1988b, male, 4.0 mm, AM P37428, Sandbank Reef.

**Pereon.** *Pereonites 2–4* with apically acute sternal spines. *Gnathopod 1* enlarged in males only; coxa distinctly produced anterodistally, sub-acute; basis robust, half or more as broad as long, without anterodistal spine, posterodistal margin with 1 seta, anterodistal margin with strong flange; ischium anterior margin without flange, posterior margin with few setae; merus not greatly elongated, fused along its entire length with carpus, posterior margin with few setae, without posterodistal spine; carpus one and one third to one and one half length of propodus, with very few setae; anterior margin without spine; propodus anterior margin weakly setiferous, posterior margin straight or weakly concave, palm present, palm delimited from posterior margin, defined by strong posterodistal spine, without robust seta defining palm, without spine near base of dactylus; dactylus about half length of propodus, significantly overlapping palm. *Gnathopod 2* subchelate; basis

anterodistal margin without flange, posterodistal margin without robust setae; with few setae along its length; merus not enlarged or produced away from carpus; carpus subequal with propodus, anterior margin not lobate; propodus with short dense setae, palm with robust seta defining palm. *Pereopod 3* without brush of long setae on merus.

**Pleon.** *Epimeron 3* posterodistal margin produced into a small spine. *Uropod 1* rami subequal, peduncle much longer than broad, distoventral spine less than half length of peduncle. *Uropod 2* biramous; peduncle without distoventral spine. *Uropod 3* biramous, rami subequal, inner ramus a little longer than peduncle.

**Female** (sexually dimorphic characters). Based on paratype female 4.0 mm, AM P37429 (Myers, 1988b). Sternal spines absent. *Gnathopod 1* coxa slightly produced anterodistally; carpus subequal in length with propodus; palm defined by oblique corner, with robust seta defining palm.

**Habitat.** Coral rubble.

**Remarks.** This species is superficially similar to *B. australis*, but is a smaller species with a number of significant differences. The male gnathopod 1 coxa is sub-acute (rounded in *B. australis*), uropod 2 peduncle lacks an distoventral spine (well developed in *B. australis*) and sternal processes are present on segments 2–4 of the male (absent in *B. australis*).

**Distribution.** *Australia*. Queensland: Sandbank Reef (Myers 1988b).

### ***Bemlos tridentatus* Myers, 1988**

(Figs 23, 24)

*Bemlos tridentatus* Myers, 1988b: 289, figs 20–21. —Lowry & Stoddart, 2003: 69 (catalogue).

**Material examined.** Not collected in the current study.

**Type locality.** Reef off North Point, Lizard Island, Queensland, Australia (14°40'S 145°28'E).

**Description.** Based on holotype, male, 2.8 mm, AM P37426 (Myers, 1988b).

**Head.** *Head* lateral cephalic lobes apically truncate. *Antenna 1* flagellum with 10 or less articles; accessory flagellum 3-articulate. *Antenna 2* stout, peduncular article 3 swollen, article 4 broad, with few long setae. *Lower lip* with fine setae and stout setae. *Maxilla 1* basal inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 longer than 2, posterior margin convex, posterior margin with setae of more than two distinct lengths.

**Pereon.** *Pereonites 3–5* with apically acute sternal spines, *Gnathopod 1* enlarged in males only; coxa distinctly produced anterodistally, sub-acute; basis robust, half or more as broad as long, without a posterodistal spine, posterodistal margin with one seta, anterodistal margin with strong flange; ischium anterior margin without flange, posterior margin with one seta; merus not greatly elongated, fused along its entire length with carpus, posterior margin with few setae, without posterodistal spine; carpus 1.3 x length of propodus, anterior margin without spine, posterior margin with 3 stout spines, the distal the largest; propodus anterior margin weakly setiferous, posterior margin straight, palm present, delimited from posterior margin, defined by weak posterodistal spine, with robust seta defining palm, without spine near base of dactylus; dactylus more than half length of propodus, slightly overlapping palm. *Gnathopod 2* subchelate; basis anterodistal margin with strong flange produced into an anterodistal lobe, posterodistal margin without robust setae; merus not enlarged or produced away from carpus; carpus subequal with or a little shorter than propodus, anterior margin not lobate, with short sparse setae; propodus with short sparse setae, palm with robust seta defining palm. *Pereopod 3* without brush of long setae on merus. *Pereopod 6* basis not produced posterodistally. *Pereopod 7* significantly greater than 125% length of pereopod 6.

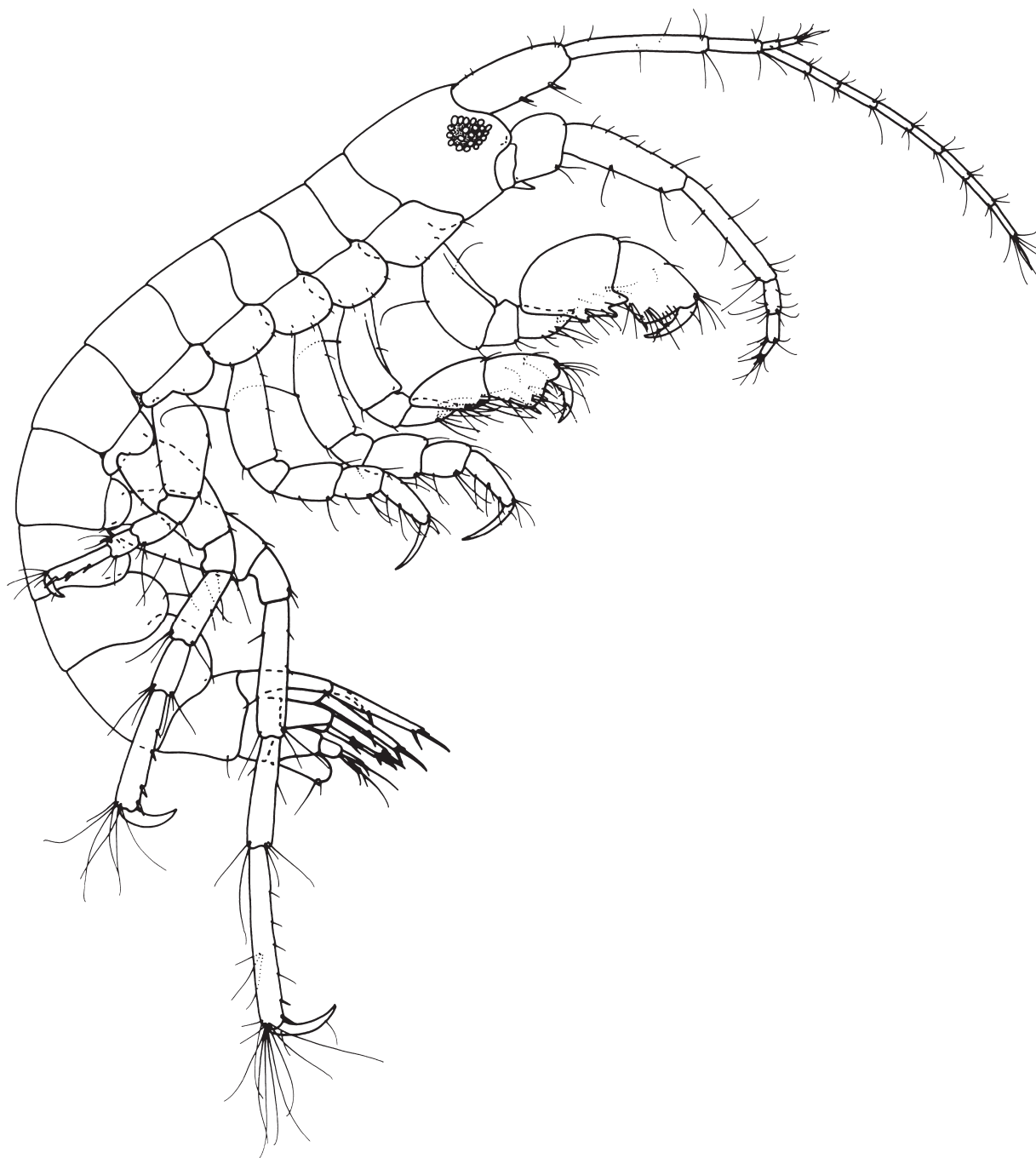
**Pleon.** *Epimeron 3* posterodistal margin rounded. *Uropod 1* rami subequal, peduncle much longer than broad, distoventral spine less than half length of peduncle. *Uropod 2* biramous; peduncle with distoventral spine, half length of peduncle. *Uropod 3* biramous, rami subequal, inner ramus 1.5 x length of peduncle. *Telson* with distal fine setae only.

**Female** (sexually dimorphic characters). Based on paratype, female, 2.9 mm, AM P37427 (Myers 1988b). Sternal spines absent. *Gnathopod 1* basis a little more slender than that of male; carpus slender, subequal in length with propodus or one and one third to one and one half length of propodus, posterior margin without spines; propodus subequal in length to carpus, palm defined by rounded corner. *Gnathopod 2* basis slender, anterodistal margin without flange.

**Habitat.** Coral rubble.

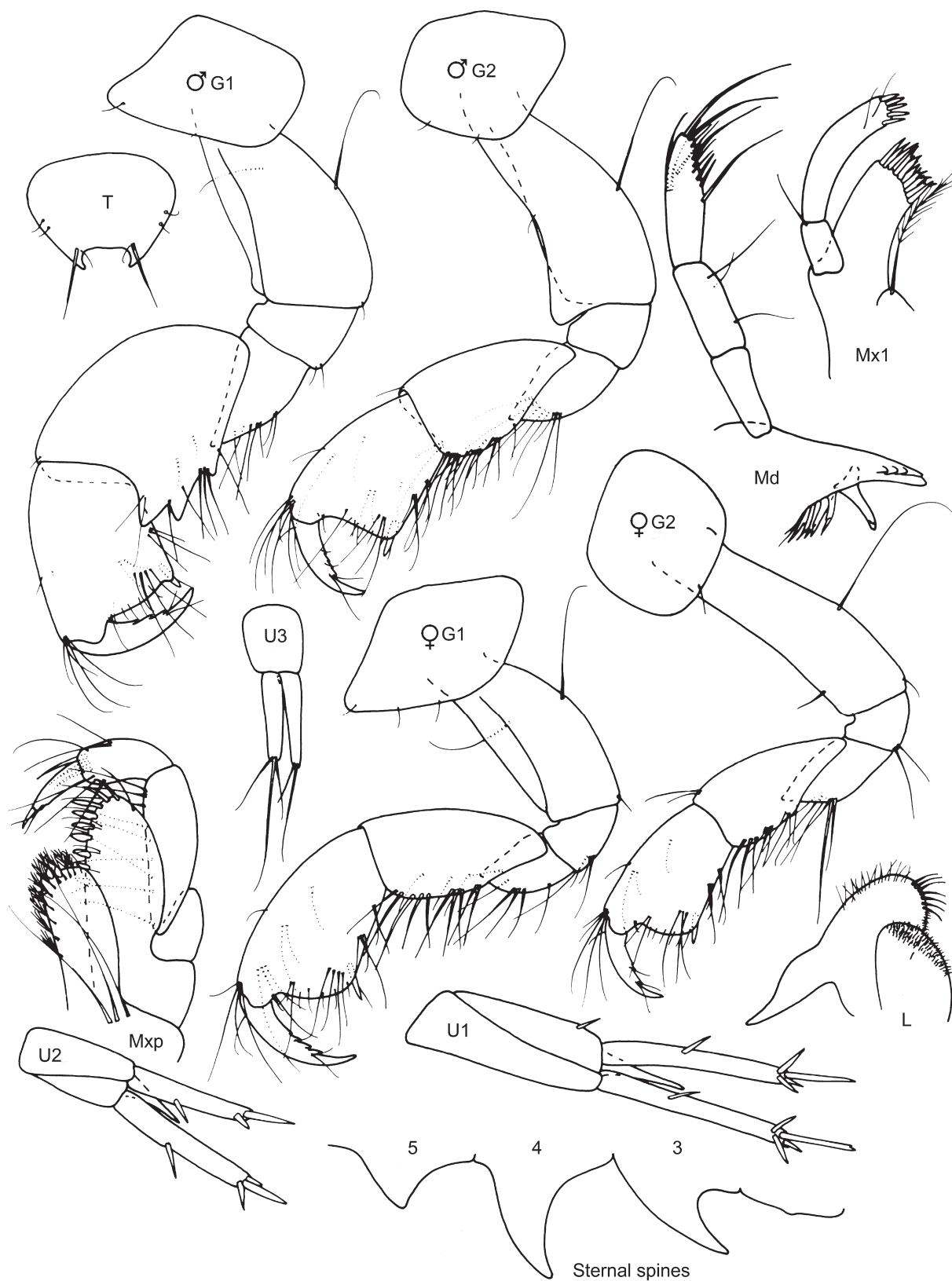
**Remarks.** This species differs from all other Great Barrier Reef species of *Bemlos* by the tridentate carpus of the male gnathopod 1.

**Distribution.** *Australia.*, Queensland: off North Point, Lizard Island (Myers 1988b).



**FIGURE 23.** *Bemlos tridentatus* Myers, 1988b, male, 2.8 mm, AM P37426, North Point, Lizard Island, Great Barrier Reef.





**FIGURE 24.** *Bemlos tridentatus* Myers, 1988b, male, 2.8 mm, AM P37426, female, 2.9 mm AM P37427, North Point, Lizard Island, Great Barrier Reef.

***Bemlos tui* (Myers, 1985)**  
(Figs 25, 26)

*Lembos tui* Myers, 1985c: 398, figs 255–258.

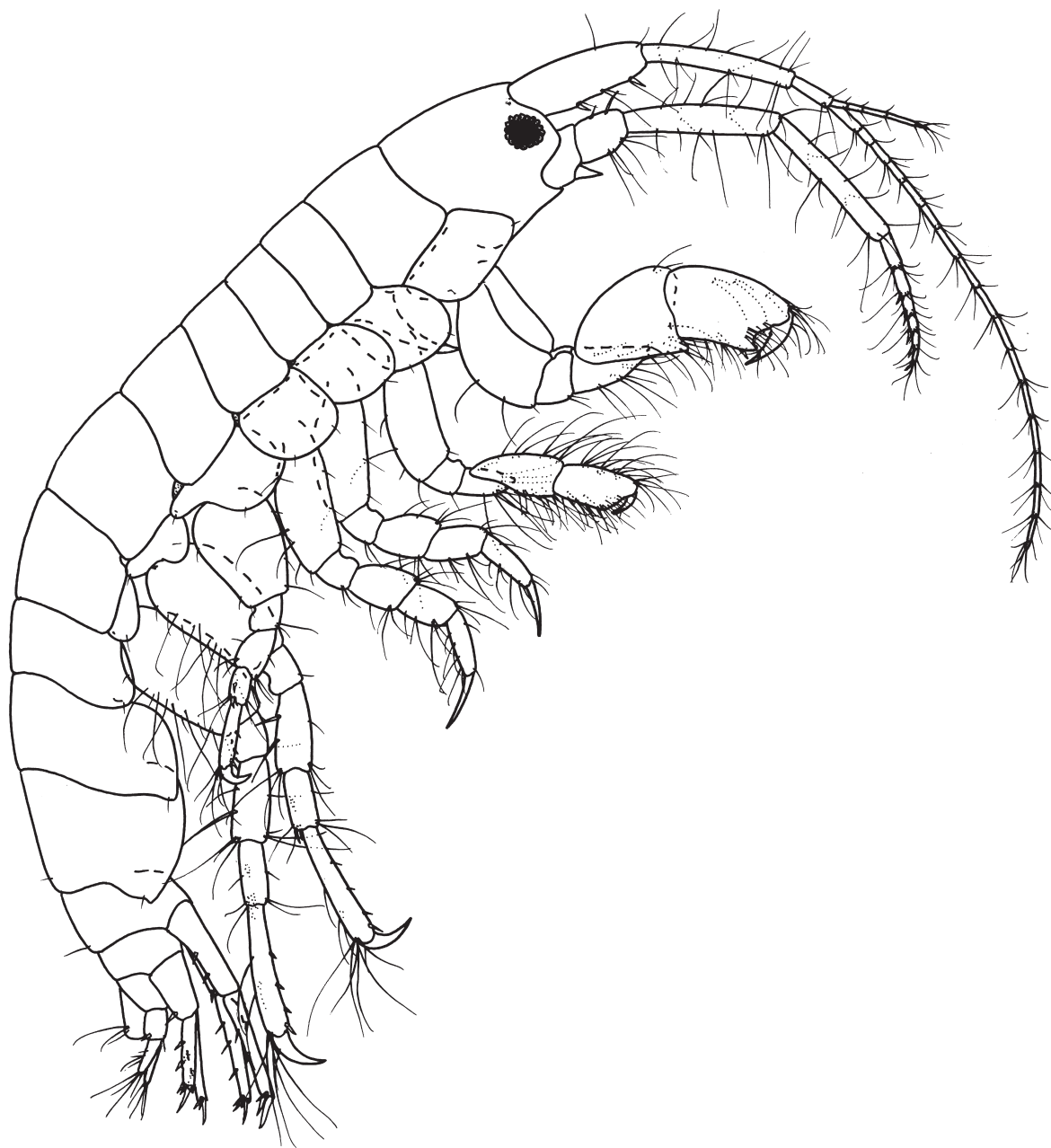
*Bemlos tui*. —Myers, 1995: 30, fig. 3. —Myers, 1998: 193, fig. 5b.

**Material examined.** 2 males, 7 females, 3 juveniles, AM P77554 (SEL/LZI-2-2).

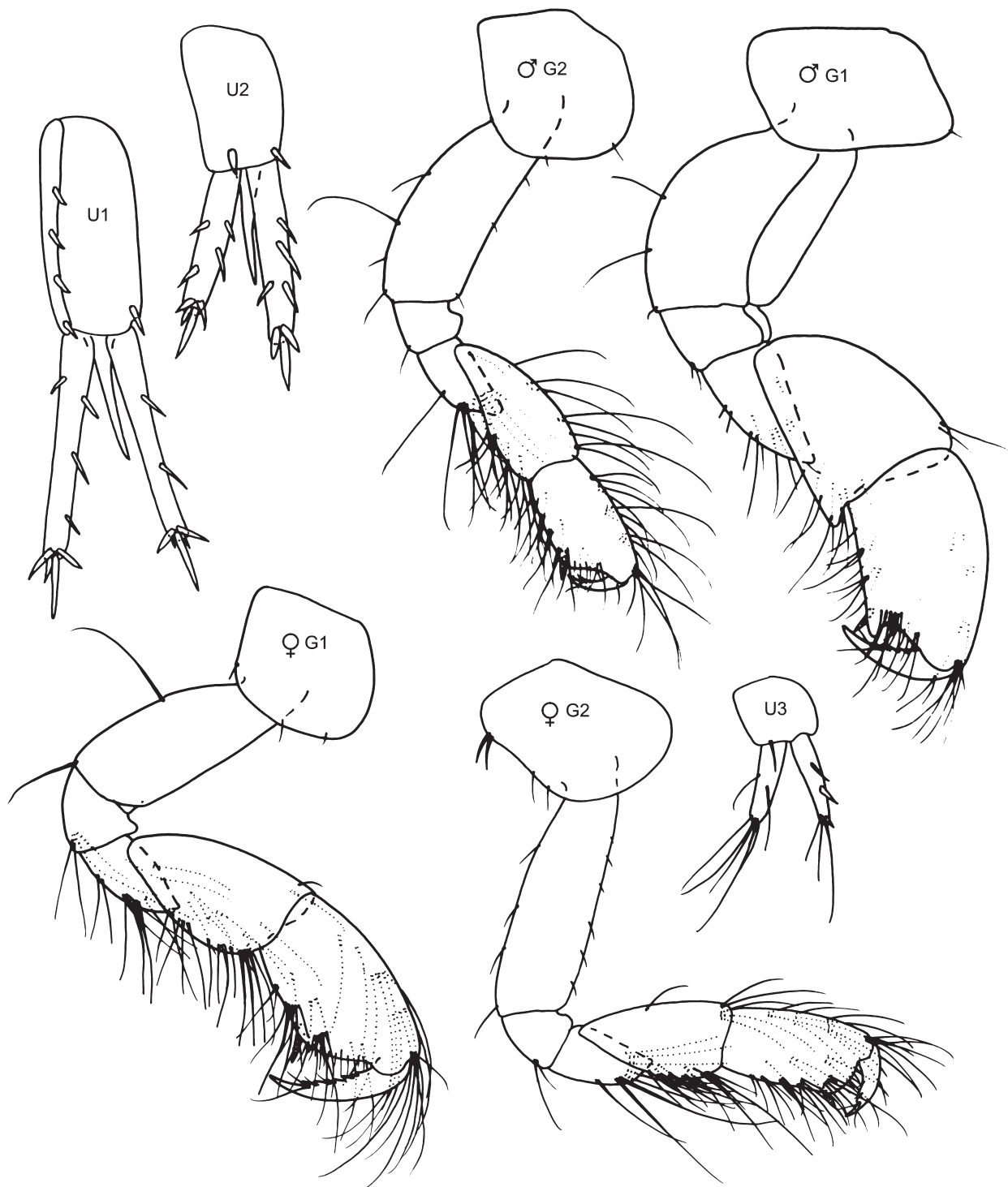
**Type Locality.** Matautu, Upolu Island, Western Samoa (~13°27'S 172°22'W).

**Description.** Based on male, 3.5 mm, AM P77554.

**Head.** Head lateral cephalic lobes apically truncated. *Antenna 1* flagellum with 20 or less articles; accessory flagellum present and multiarticulate. *Lower lip* with fine setae and stout setae. *Maxilla 1* inner plate with 1 long pectinate apical seta. *Mandible* palp article 3, posterior margin straight or weakly falcate, posterior margin with setae of two distinct lengths, long setae and an under-story of much shorter regularly spaced setae.



**FIGURE 25.** *Bemlos tui* (Myers, 1985c), male, 3.5 mm, AM P77554, Lizard Island, Great Barrier Reef.



**FIGURE 26.** *Bemlos tui* (Myers, 1985c), male, 3.5 mm, female, 3.5 mm, AM P77554, Lizard Island, Great Barrier Reef.

**Pereon.** *Pereonite 2* with sternal spine. *Gnathopod 1* enlarged in males only; coxa anterodistally, subacute, with few or no setae present along margin, with setae sparse or absent, anterodistal margin with flange weak or absent; ischium anterior margin without flange; merus not greatly elongated, fused along its entire length with carpus, posterior margin with sparse setae or setae absent, without posterodistal spine; carpus two thirds or less length of propodus, with setae sparse or absent, carpus without spines; palm delimited from posterior margin, margin forming a broad excavate sinus, palm defined by strong posterodistal spine; dactylus

more than half length of propodus, significantly overlapping palm. *Gnathopod 2* basis anterior margin weakly setiferous, sub-straight, anterodistal margin without spine, posterodistal margin without robust setae; carpus subequal with or shorter than propodus, with long dense setae. *Pereopod 3* basis anterior margin unexpanded, straight or weakly concave. *Pereopod 7* significantly greater than 125% length of pereopod 6.

**Pleon.** *Epimeron 3* posterodistal margin produced into a small spine. *Uropod 1* distoventral spine shorter than peduncle. *Uropod 3* biramous, outer ramus more than half length of inner ramus.

**Female** (sexually dimorphic characters). Based on female, 3.5 mm, AM P77554. *Pereonite 2* lacking sternal spine. *Gnathopod 1* carpus and propodus more slender than that of male, without spine at posterodistal margin of carpus, and propodus with evenly convex palm. *Gnathopod 2* more slender, anterior margin of carpus and propodus weakly setiferous.

**Habitat.** Coral rubble and *Halimeda* (green alga).

**Remarks.** This species most closely resembles *B. triangulum*, but that species has a male gnathopod 1 with a more enlarged carpus, lacking a carpal spine. *B. triangulum* also lacks the dense long setae on the anterior margin of the carpus in the male gnathopod 2 of *B. tui*.

*Bemlos tui* differs from *B. gladius* in lacking long setae on the posterior margin of the basis of the male gnathopods 1 and 2, and from *B. bidens* in lacking a spine of the merus of the male gnathopod 1.

**Distribution.** *Australia*. Queensland: Picnic Beach, Palfrey Island, Lizard Island (current study). *Western Samoa*. Upolu Island (Myers 1985c). *Papua New Guinea*. Madang lagoon (Myers 1995). *New Caledonia*. South-west Lagoon, Noumea (Myers 1998).

### ***Bemlos waipio* (J.L. Barnard, 1970)**

(Figs 27, 28)

*Lembos processifer* J.L. Barnard, 1965: 529, figs 28g–m (not *L. processifer* Pirlot, 1938).

*Lembos waipio* J.L. Barnard, 1970: 85, figs 44–45. —Myers, 1985c: 379, figs 242–245.

? *Lembos waipio*. —Ledoyer, 1984: 37, fig. 17B.

*Bemlos waipio*. —Myers, 1988a, 189. —Myers, 1995, 30. —Myers, 1998, 193.

**Material examined.** 1 male, AM P70645 (QLD 1634); 1 male, 2 females, AM P70683 (QLD 1641).

**Type locality.** Off Barbers Point, Oahu, Hawaii, USA (~21°19'40"W 158°7'10"N).

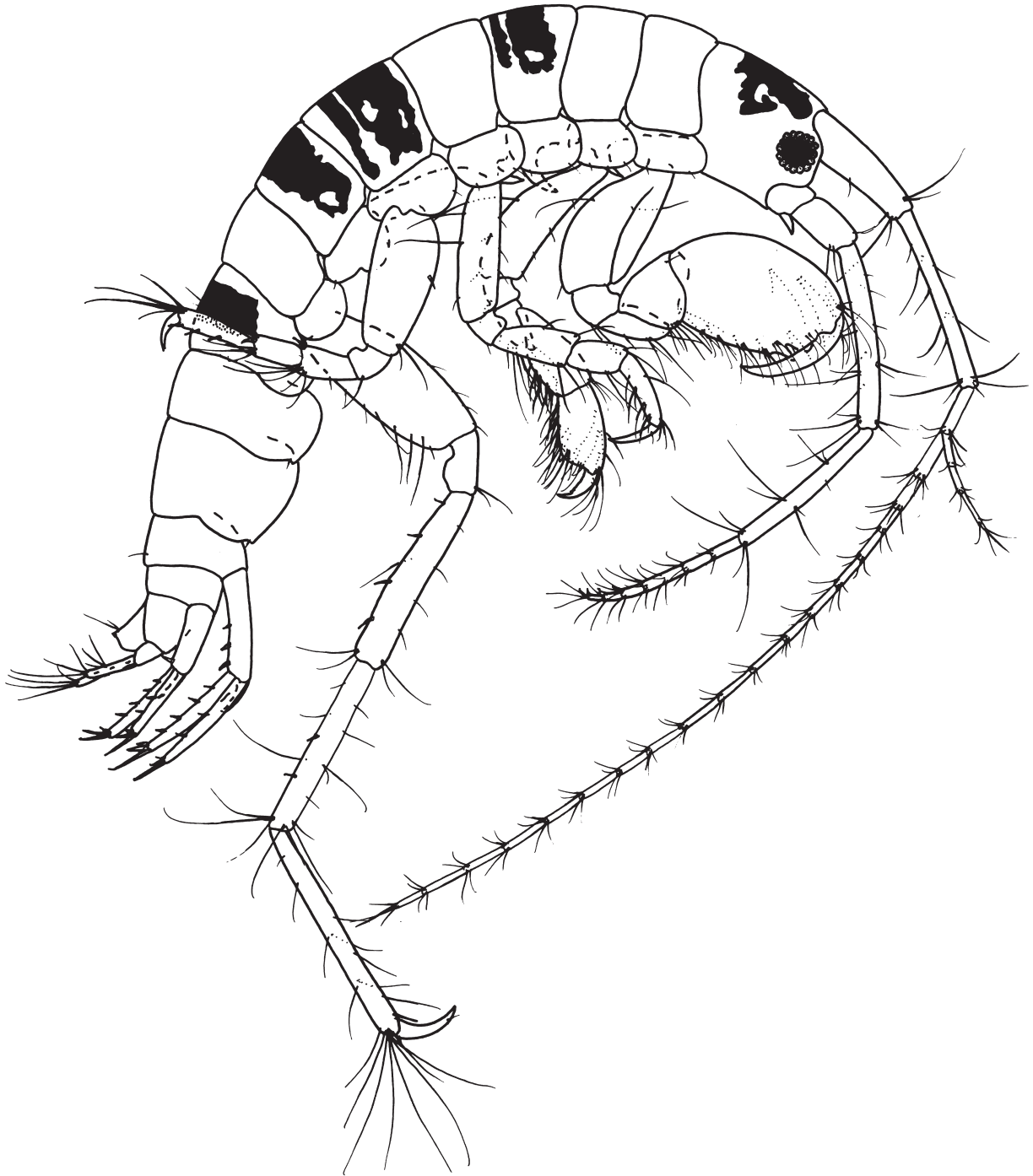
**Description.** Based on male, 6.0 mm, AM P70645, female, 5.9 mm AM P70683.

**Head.** Head lateral cephalic lobes apically truncate. *Antenna 1* flagellum with about 20 articles, accessory flagellum multiarticulate. *Antenna 2* with few long setae. *Lower lip* with fine setae and stout setae. *Maxilla 1* inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 longer than 2, posterior margin straight, with setae of two distinct lengths, long setae and an under-story of much shorter regularly spaced setae.

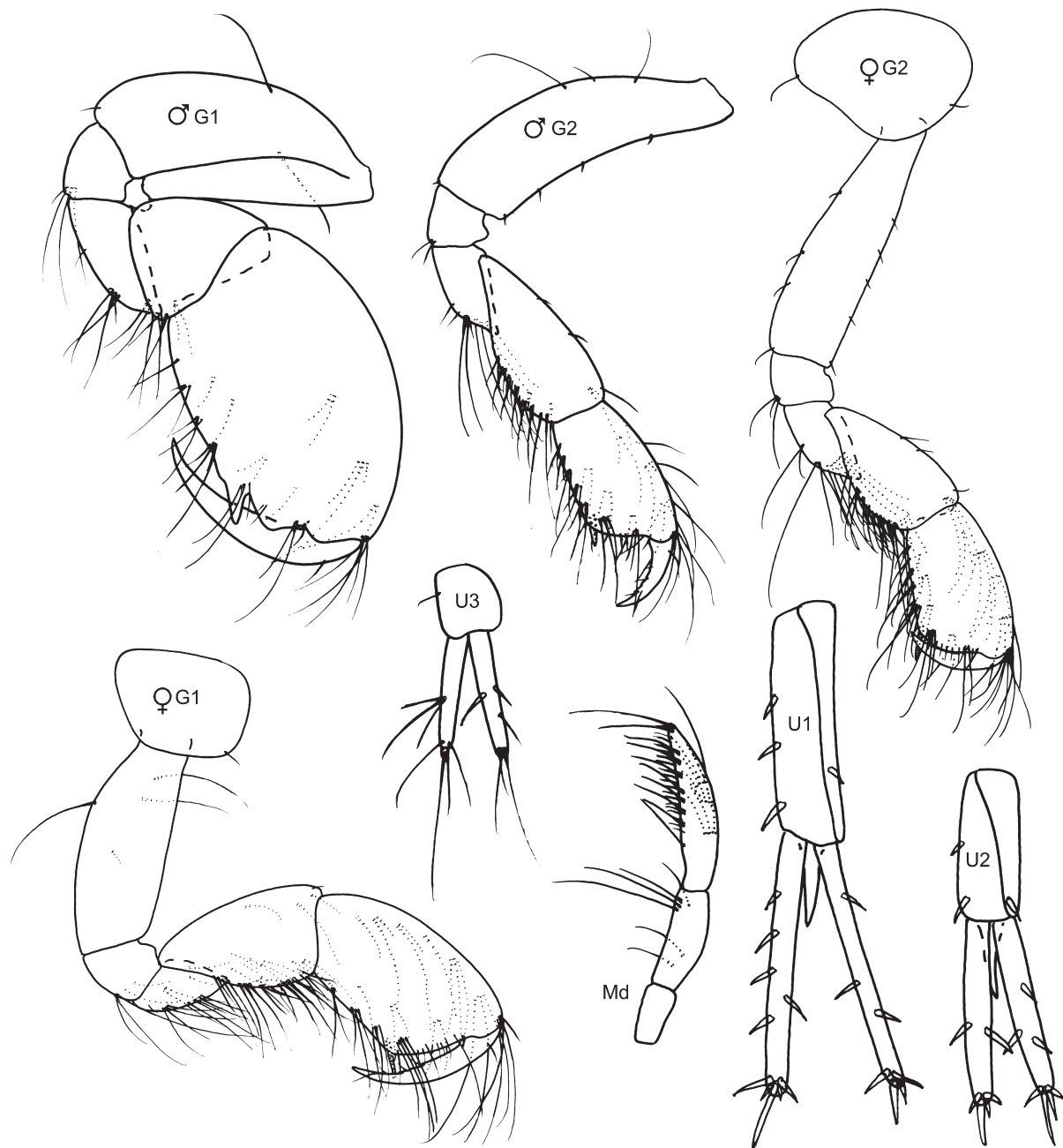
**Pereon.** *Pereonites 2–4* with apically acute sternal spines. *Gnathopod 1* coxa unproduced anterodistally, rounded; basis robust, twice as long as broad, posterodistal margin with few setae; ischium anterior margin without flange, posterior margin with one long seta; merus not greatly elongated, fused along its entire length with carpus, posterior margin with few setae, without spine; carpus one third length of propodus, with few setae, anterior margin with no spine; without an oblique row of long setae on inner face, posterodistal margin without spine; propodus anterior margin weakly setiferous, posterior margin sinuous, palm present, delimited from posterior margin, forming a narrow sinus, with strong posterodistal spine, without spine near base of dactylus; dactylus more than half length of propodus, significantly overlapping palm. *Gnathopod 2* subchelate; basis anterior margin weakly concave, anterodistal margin without flange, posterodistal margin without robust setae; with few setae along length of basis; carpus longer than propodus, with short sparse setae; propodus with moderately dense long setae, palm with robust seta defining palm. *Pereopod 3* basis unexpanded, without brush of long setae on merus. *Pereopod 6* basis weakly produced posterodistally. *Pereopod 7* 125% length of pereopod 6.

**Pleon.** *Epimeron 3* posterodistal margin with small notch bearing a seta. *Uropod 1* rami subequal, peduncle much longer than broad, distoventral spine shorter than peduncle. *Uropod 2* biramous; peduncle with distoventral spine shorter than peduncle. *Uropod 3* biramous, inner ramus nearly 2 x length of peduncle. *Telson* with distal fine setae only.

**Female** (sexually dimorphic characters). Based on female, 5.9 mm, AM P70683. Sternal spines absent. *Gnathopod 1* basis relatively slender, about 3 x as long as broad; carpus about two thirds length of propodus, palm defined by a rounded corner and a stout robust seta; dactylus overlapping palm. *Gnathopod 2* basis slender, anterior margin straight to weakly convex, carpus and propodus subequal in length.



**FIGURE 27.** *Bemlos waipio* (J.L. Barnard, 1970), male 4.5 mm, AM P70683, Loomis Beach moorings, Lizard Island, Great Barrier Reef.



**FIGURE 28.** *Bemlos waipio* (J.L. Barnard, 1970), male 4.5 mm, female, 4.0 mm, AM P70683, Loomis Beach moorings, Lizard Island, Great Barrier Reef.

**Habitat.** Coral rubble often with algae and epiphytes over sandy bottoms in shallow water.

**Remarks.** *Bemlos waipio* could only be confused with *B. clypeatus*, but differs in lacking a spine on the anterodistal margin of the basis in the male gnathopod 2 and in the unexpanded basis of the male pereopod 3.

**Distribution.** *Australia.* Queensland: Lizard Island. *Hawaii.* Oahu (J.L. Barnard 1970). *Caroline Islands.* Ifaluk Atoll (J.L. Barnard 1965). *Vanuatu.* Efate Island (Myers 1985c). *Papua New Guinea.* Madang lagoon (Myers 1995). *New Caledonia.* South-west Lagoon, Noumea (Myers 1998).



***Globosolembos* Myers 1985a**

***Globosolembos excavatus* (Myers, 1975)**

(Figs 29, 30)

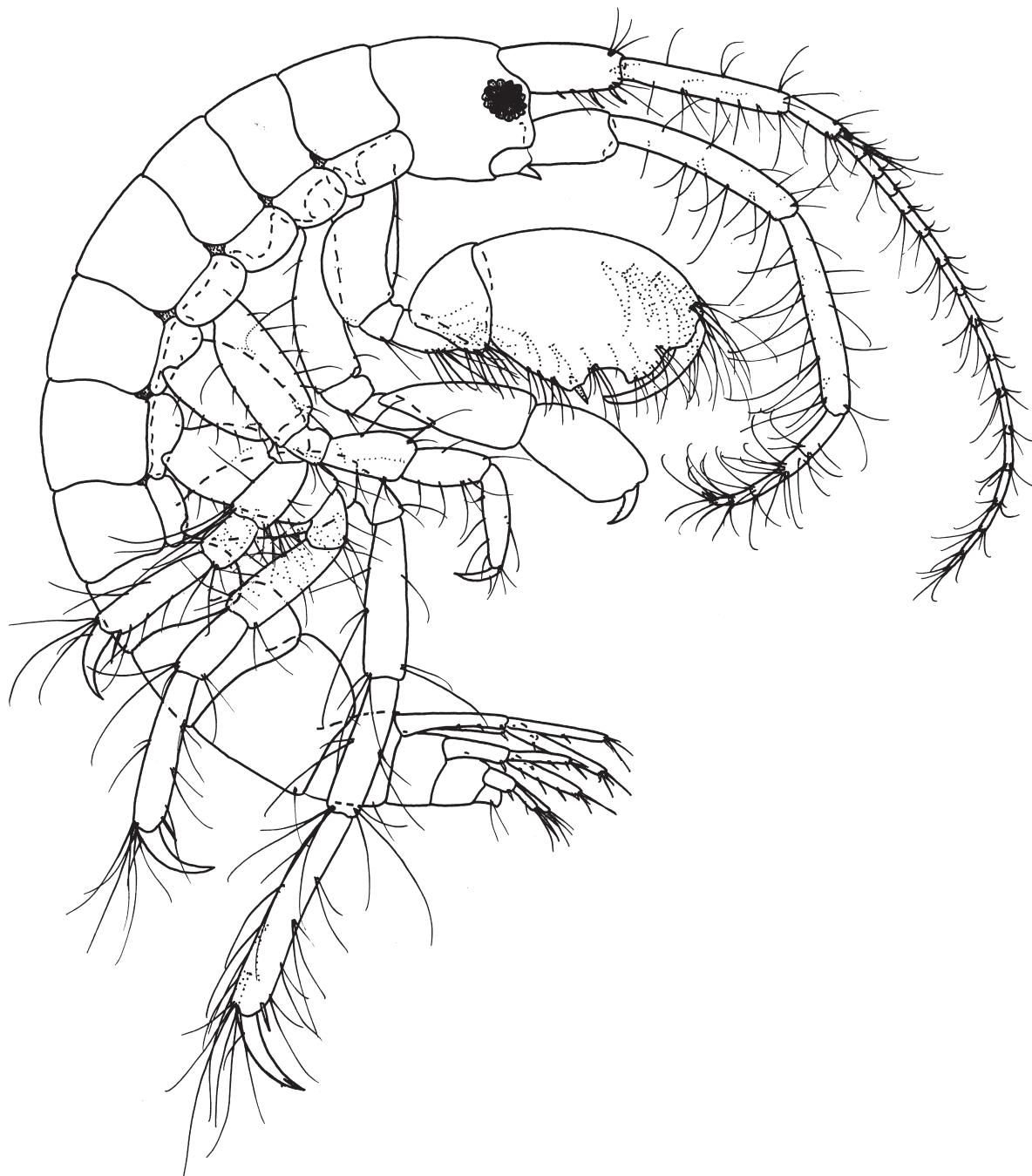
*Lembos excavatus* Myers, 1975: 32, figs 76–82. —Ledoyer, 1982: 218, figs 104–105 (in part).

*Lembos processifer*. —Ledoyer, 1984: 35 (in part), fig. 16 (“forme 2”) (not *L. processifer* Pirlot, 1938, 330, figs 147–149).

*Lembos* (*Globosolembos*) *excavatus*. —Myers, 1985a: 363, fig. 234.

*Globosolembos excavatus*. —Myers, 1986: 285, figs 11–12. —Myers, 1988b: 329. —Myers, 1998: 195. —Appadoo & Myers, 2004, 353. —Myers, 2005, 358. —Lowry & Stoddart, 2003: 69 (catalogue).

**Material examined.** 1 juvenile male, AM P71202 (QLD 1747); 5 males, 1 female, AM P28862 (QLD 2009).

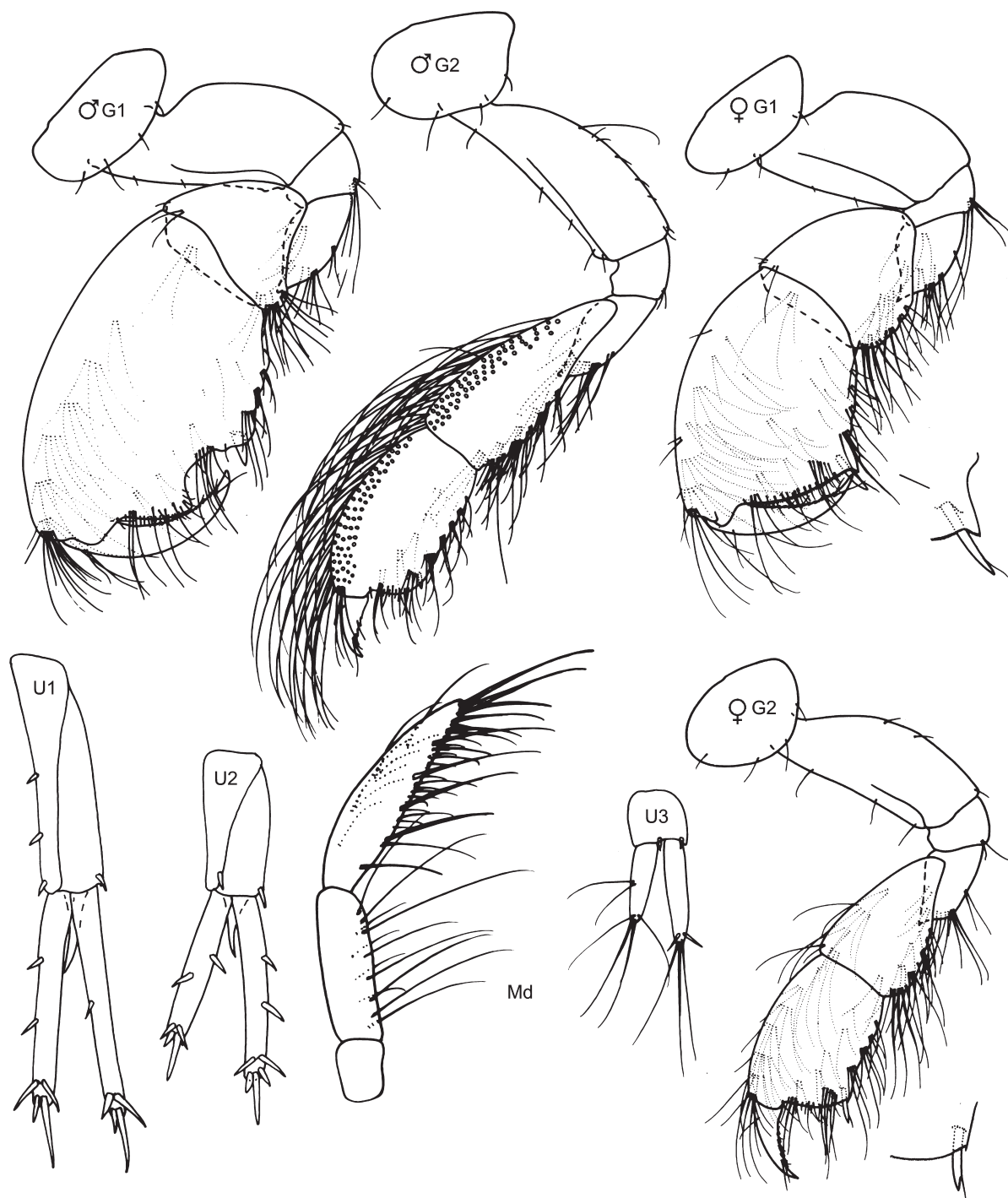


**FIGURE 29.** *Globosolembos excavatus* (Myers, 1975), male, 3.0 mm, AM P28862, Heron Island, Great Barrier Reef.

**Type locality.** Watamu Bay, Kenya (~3°23'S 39°59'E).

**Description.** Based on male, 3.0 mm, AM P28862.

**Head.** Head lateral cephalic lobes apically truncate. *Antenna 1* flagellum with less than 20 articles. *Antenna 2* with few long setae. *Labium* with fine setae and stout setae. *Maxilla 1* inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 longer than 2, posterior margin weakly falcate, posterior margin with setae of more than two distinct lengths.



**FIGURE 30.** *Globosolembos excavatus* (Myers, 1975), male, 3.0 mm, female, 3.0 mm, AM P28862, Heron Island, Great Barrier Reef.

**Pereon.** *Pereonites* 2–4 with apically sub-acute or rounded sternal spines. *Gnathopod* 1 enlarged in both sexes; coxa unproduced anterodistally; basis robust, half or more as broad as long, posterodistal margin without setae, anterodistal margin with strong flange; ischium anterior margin without flange; merus fused along its entire length with carpus, posterior margin without posterodistal spine; carpus one third length of propodus, anterior margin without spine, posterior margin without spines; propodus anterior margin moderately setiferous, posterior margin weakly convex, palm present, delimited from posterior margin, margin forming a broad excavate sinus, robust seta defining palm, without spine near base of dactylus; dactylus about half length of propodus, fitting palm. *Gnathopod* 2 subchelate; basis anterodistal margin with weak flange, posterodistal margin without robust setae; with few setae along its length; merus not enlarged or produced away from carpus; carpus longer than propodus, anterior margin with long dense setae; propodus anterior margin with long dense setae, palm with robust seta defining palm. *Pereopod* 3 without brush of long setae on merus. *Pereopod* 6 basis not produced posterodistally. *Pereopod* 7 significantly less than 125% length of pereopod 6.

**Pleon.** *Epimeron* 3 posterodistal margin rounded. *Uropod* 1 rami subequal, peduncle much longer than broad, distoventral spine one third length of peduncle. *Uropod* 2 biramous; peduncle with distoventral spine one half length of peduncle. *Uropod* 3 biramous, rami distinctly unequal, inner ramus 1.5 x length of peduncle; outer ramus lacking second article. *Telson* with distal fine setae only.

**Female** (sexually dimorphic characters). Based on female, 3.0 mm, AM P28862. Sternal spines absent. *Gnathopod* 1 carpus a little over one half length of propodus; propodus with palm defined by a small spine and a robust seta. *Gnathopod* 2 basis anterodistal margin without flange; carpus shorter than propodus, with short sparse setae; propodus with long setae, less dense than those of male.

**Habitat.** Coral rubble.

**Remarks.** *Globosolembos excavatus* differs from other *Globosolembos* species on the Great Barrier Reef by the broad excavate sinus on the posterior margin of the male gnathopod 1.

**Distribution.** *Australia*. Queensland: Lizard Island (Myers 1985a; 1988b, current study); Heron Island (Myers 1985a, 1988b). *East Africa*. Tanzania: Kenya (Myers 1975b). *Madagascar*. Tulear (Ledoyer 1982). *Mauritius* (Appadoo & Myers 2004). *New Caledonia*. Noumea (Ledoyer 1984; Myers 1998). *Rodrigues* (Myers 2004). *Society Islands*. Austral Isles (Myers 2005). *Tonga* (Myers 1985a).

### ***Globosolembos longispinosus* Ren, 2006** (Figs 31, 32)

*Globosolembos longispinosus* Ren, 2006: 365, fig. 154.

*Lembos* sp. Myers, 1985a: 365, fig. 335.

*Globosolembos ruffoi* —Myers, 1988b: 327, fig. 54 (not *G. ruffoi* Myers, 1975: 22, figs 68–75). —Myers, 1995, 35, fig. 7.

**Material examined.** 1 male, 5.5 mm, AM P70590 (QLD 1622); 1 unsexed, P75471 (QLD 1622).

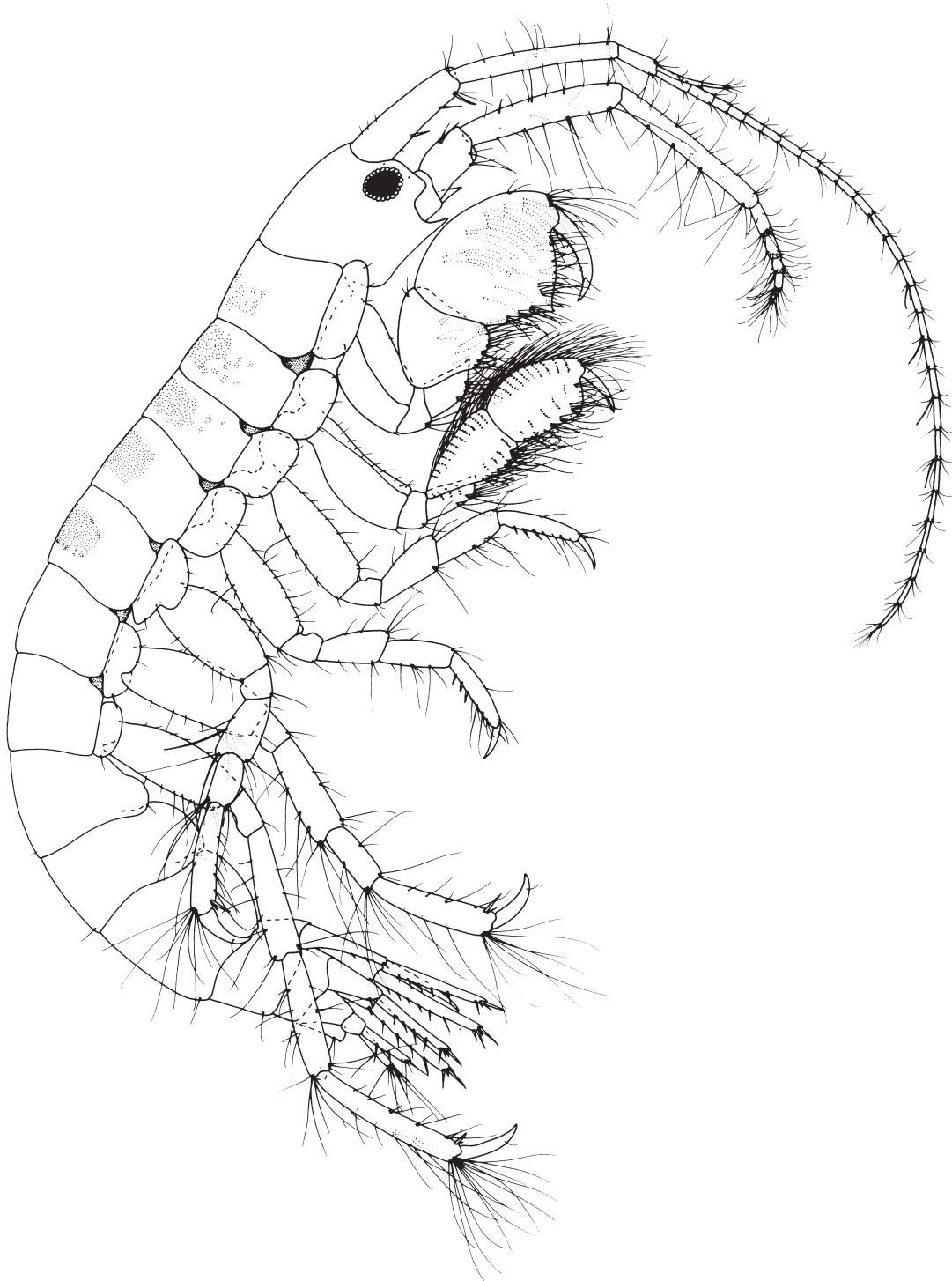
**Type locality.** Yalong Bay, Sanya, Hainan Province, China (~18°14'N 109°29'E).

**Description.** Based on male, 5.5 mm, AM P70590.

**Head.** *Head* lateral cephalic lobes apically truncate. *Antenna* 1 flagellum with 21 or more articles; accessory flagellum multiarticulate. *Antenna* 2 with moderately profuse long setae. *Lower lip* with fine setae and stout setae. *Maxilla* 1 inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 subequal to 2, posterior margin weakly falcate, posterior margin with setae of more than two distinct lengths.

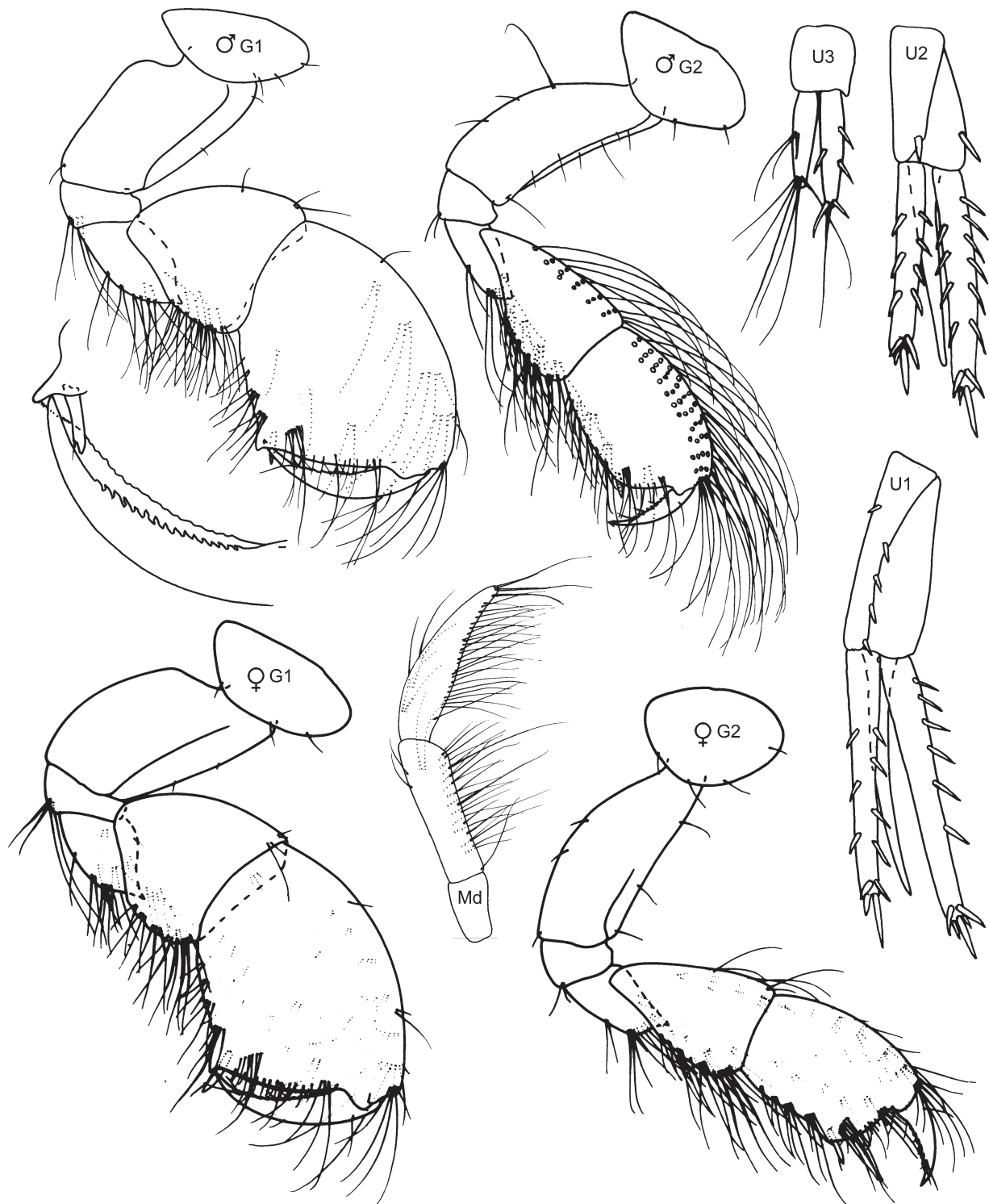
**Pereon.** *Pereonites* 2–7 with sternal spines, acute on segment 2, apically rounded on segments 3–7. *Gnathopod* 1 enlarged in both sexes; coxa elongate and shallow, weakly produced anterodistally, rounded; basis robust, half or more as broad as long, anterodistal margin with strong flange; ischium anterior margin without flange, posterior margin with few setae; merus not greatly elongated, fused along its entire length with carpus, posterior margin with few setae, without posterodistal spine; carpus a little over half length of propodus, anterior margin without spine; posterior margin without spines; propodus anterior margin

moderately setiferous, posterior margin straight and weakly scalloped, palm evenly convex, delimited from posterior margin, defined by strong posterodistal spine, with robust seta, without spine near base of dactylus; dactylus more than half length of propodus, fitting palm. *Gnathopod 2* subchelate; basis anterodistal margin with flange, posterodistal margin without robust setae; with few setae along length of basis; merus not enlarged or produced away from carpus; carpus subequal with propodus, anterior margin not lobate, with long setae; carpus and propodus anterior margin with long dense setae, palm with robust seta defining palm. *Pereopod 3* without brush of long setae on merus. *Pereopod 6* basis not produced posterodistally. *Pereopod 7* less than 125% length of pereopod 6.



**FIGURE 31.** *Globosolembos longispinosus* Ren, 2006, male, 5.5 mm, AM P70590, off Palfrey Island, Lizard Island, Great Barrier Reef.

**Pleon.** *Epimeron 3* posterodistal margin rounded. *Uropod 1* rami distinctly unequal, peduncle much longer than broad, distoventral spine much longer than peduncle and subequal in length with outer ramus. *Uropod 2* biramous; peduncle with distoventral spine much longer than peduncle and longer than outer ramus. *Uropod 3* biramous, peduncle with inner distal margin produced into a triangular spine, rami distinctly unequal, endopod almost twice length of peduncle. *Telson* with distal fine setae only.



**FIGURE 32.** *Globosolembos longispinosus* Ren, 2006, male, 5.5 mm, AM P70590, paratype, female, 5.0 mm, AM P75471, off Palfrey Island, Lizard Island, Great Barrier Reef.



**Female** (sexually dimorphic characters). Based on female, 5.0 mm, AM P75471. Sternal spines absent. *Gnathopods* 1–2 coxa a little deeper than that of male.

**Habitat.** Among coral rubble.

**Remarks.** This species is very close to *G. ruffoi* Myers, 1975. It is characterised by the presence of an extremely long distoventral spine on uropods 1–2, that is equal to, or exceeds the length, of the outer ramus. No other aorid amphipod is known to have such an excessively long distoventral spine. The peduncle of uropod 3 has a spine at the inner distal margin in *G. longispinosus* not present in *G. ruffoi*, and there are slight differences in the proportions of the carpus and propodus of the male gnathopods 1–2, the carpus of *G. longispinosus* being a little longer than that of *G. ruffoi*. The male gnathopod 1 palm is less convex in *G. longispinosus* than in *G. ruffoi*.

**Distribution.** *Australia*. Queensland: Palfrey Island, Lizard Island (current study). *China*. Hainan Province: Yalong Bay, Sanya (Ren 2006). *Papua New Guinea*. Madang Lagoon (Myers 1995).

### ***Globosolembos ovatus* Myers, 1985**

(Figs 33, 34)

*Lembos* (*Globosolembos*) *ovatus* Myers, 1985a, 354, figs 228–230.

*Globosolembos ovatus* —Myers, 1985b, 47, figs 34–35. —Myers, 1989, 66, table 1. —Myers, 1995, 33.

**Material examined.** 2 males, 4 females, AM P70721 (QLD 1645); 4 males, 1 female, 1 juvenile, AM P70889 (QLD 1653); 1 male, AM P70787 (QLD 1668); 2 males, 3 females, AM P71192 (QLD 1730); 1 male, 2 females, 2 juveniles, AM P71115 (QLD 1748); 1 male, AM P71169 (QLD 1751); 1 male, AM P71288 (QLD 1763); 1 male, AM P71456 (QLD 1789); 2 males, 2 females, AM P71468 (QLD 1792); 1 female, 3 juveniles, AM P71357 (QLD 1803).

**Type locality.** Taunovo Bay, Viti Levu, Fiji (~18°16'S 178°2'E).

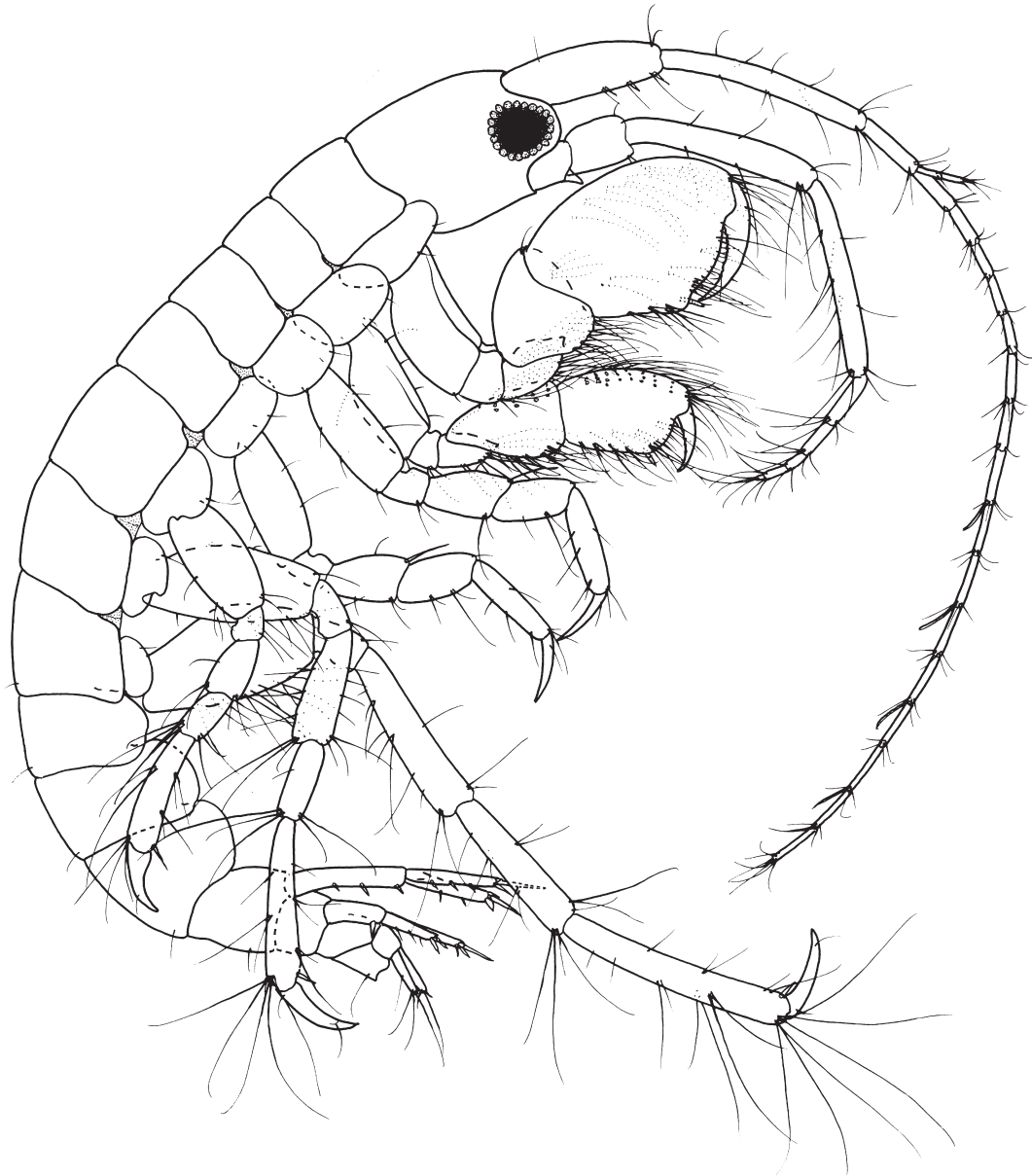
**Description.** Based on male, 2.9 mm, AM P70889.

**Head.** Head lateral cephalic lobes apically truncate. *Antenna* 1 flagellum with about 16 articles *Antenna* 2 with few long setae. *Lower lip* with fine setae and stout setae. *Maxilla* 1 inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 longer than 2, posterior margin weakly falcate, posterior margin with setae of more than two distinct lengths.

**Pereon.** *Pereonites* 2–4 with apically sub-acute or rounded sternal spines. *Gnathopod* 1 enlarged in both sexes; coxa produced anterodistally, rounded; basis robust, half or more as broad as long, posterodistal margin without setae, anterodistal margin with strong flange; ischium anterior margin without flange; merus fused along its entire length with carpus, posterior margin without posterodistal spine; carpus one half length of propodus, anterior margin without spine, posterior margin without spines; propodus anterior margin moderately setiferous, posterior margin weakly convex, palm present, evenly convex, delimited from posterior margin by weak rounded lobe, robust seta defining palm, without spine near base of dactylus; dactylus more than half length of propodus, fitting palm. *Gnathopod* 2 subchelate; basis anterodistal margin with weak flange, posterodistal margin without robust setae; with few setae along its length; merus not enlarged or produced away from carpus; carpus and propodus subequal in length, anterior margin with long dense setae; propodus anterior margin with long dense setae, palm with robust seta defining palm. *Pereopod* 3 without brush of long setae on merus. *Pereopod* 6 basis not produced posterodistally. *Pereopod* 7 significantly less than 125% length of pereopod 6.

**Pleon.** *Epimeron* 3 posterodistal margin rounded. *Uropod* 1 rami subequal, peduncle much longer than broad, distoventral spine one quarter length of peduncle. *Uropod* 2 biramous; peduncle with rudimentary distoventral spine less than one quarter of peduncle. *Uropod* 3 biramous, rami distinctly unequal, inner ramus 1.5 x length of peduncle; outer ramus lacking a second article. *Telson* with distal fine setae only.





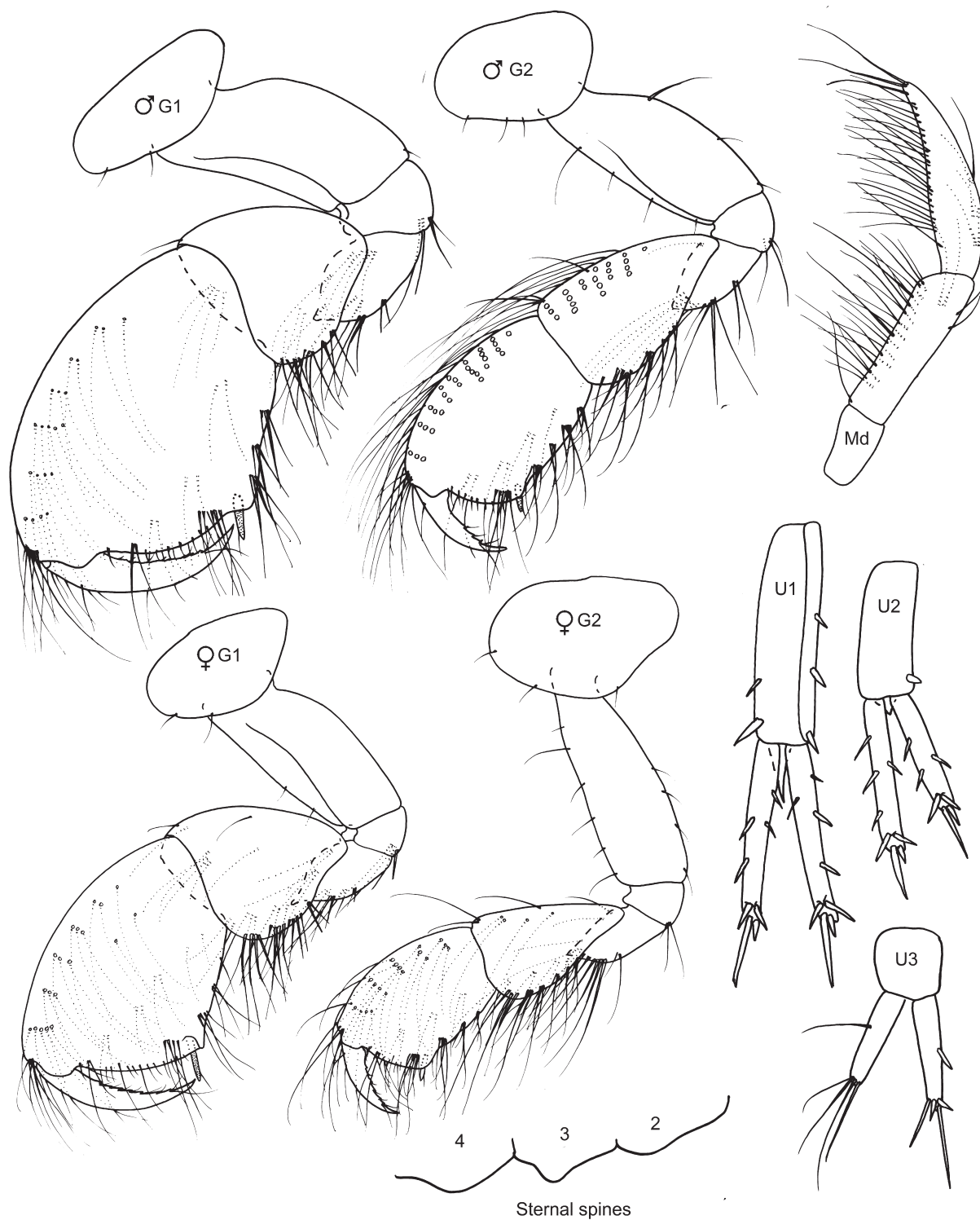
**FIGURE 33.** *Globosolembos ovatus* (Myers, 1985a), male, 2.9 mm, AM P70889, Watsons Bay, Lizard Island, Great Barrier Reef.

**Female** (sexually dimorphic characters). Based on female, 3.0 mm, AM P70721. Sternal spines absent. *Gnathopod 1* carpus a little over one half length of propodus; propodus with palm defined by a right angle and a robust seta. *Gnathopod 2* basis anterodistal margin without flange; carpus shorter than propodus, with sparse setae; propodus with long setae, less dense than those of male.

**Habitat.** Primarily coral rubble and coarse sand. Occasionally in *Halimeda*, mixed red and brown algae, tunicates.

**Remarks.** The species resembles *G. longispinosus* in general appearance but the posterodistal margin of the male gnathopod 1 propodus is rounded in *G. ovatus* (acute in *G. longispinosus*). In addition, the uropods 1 and 2 peduncles have very short distoventral spines in *G. ovatus* whereas they are longer than the peduncle in *G. longispinosus*.

**Distribution.** *Australia.* Queensland: Lizard Island (current study). *Papua New Guinea.* Madang lagoon (Myers 1995). *Vanuatu.* Efate Island (Myers 1985a). *Fiji:* Viti Levu (Myers 1985a, 1985b). *Western Samoa.* Upolu Island (Myers 1985a). *Society Islands.* Moorea (Myers 1989).



**FIGURE 34.** *Globosolembos ovatus* (Myers, 1985a), male, 2.9 mm, AM P70889, female, 3.0 mm, AM P70721, Watsons Bay, Lizard Island.

***Globosolembos springthorpei* sp. nov.**  
(Figs 35, 36, Pl. 2B)

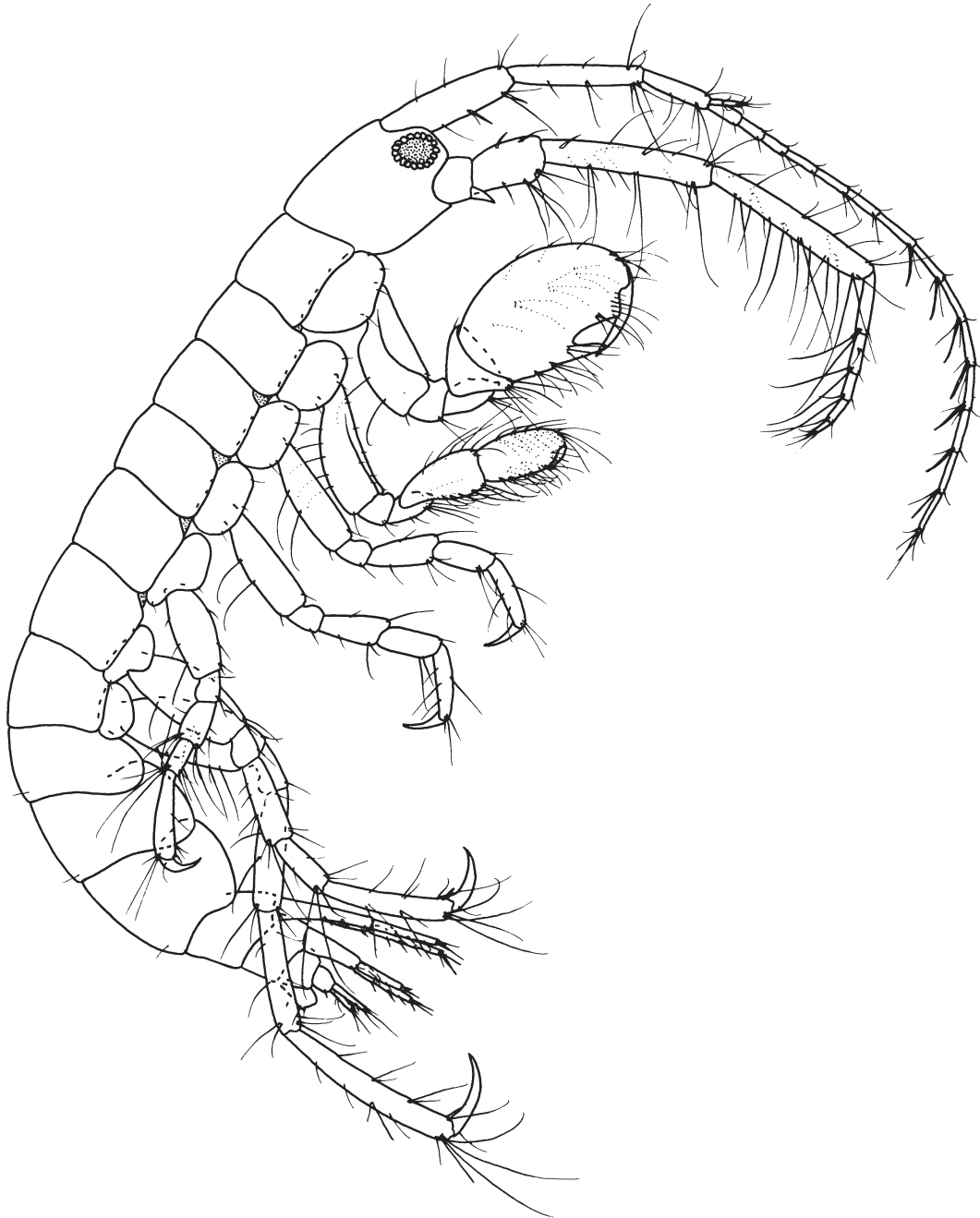
**Type material.** Holotype, male, 4.0 mm, AM P75467, 500 m north-east of North Point, Lizard Island (14°38.700'S 145°27.213'E), *Halimeda* sp. (green alga) with epiphytes, soft bottom with forams, crinoids,

*Halimeda macroloba*, *Halimeda cylindracea*, *Caulerpa taxifolia*, *Gracilaria* sp., *Lobophora* sp) and sediment, 23.9 m, R.T. Springthorpe, 27 February 2005 (QLD 1707). Paratypes: 7 males, 3 females, same data as holotype, AM P75468 (QLD 1707).

**Additional material examined.** 1 male, 1 female, AM P71009 (QLD 1707).

**Type Locality.** Off North Point, Lizard Island, Queensland, Australia (14°40'S 145°28'E).

**Etymology.** Named for Roger Springthorpe, who collected all the material of this new species.

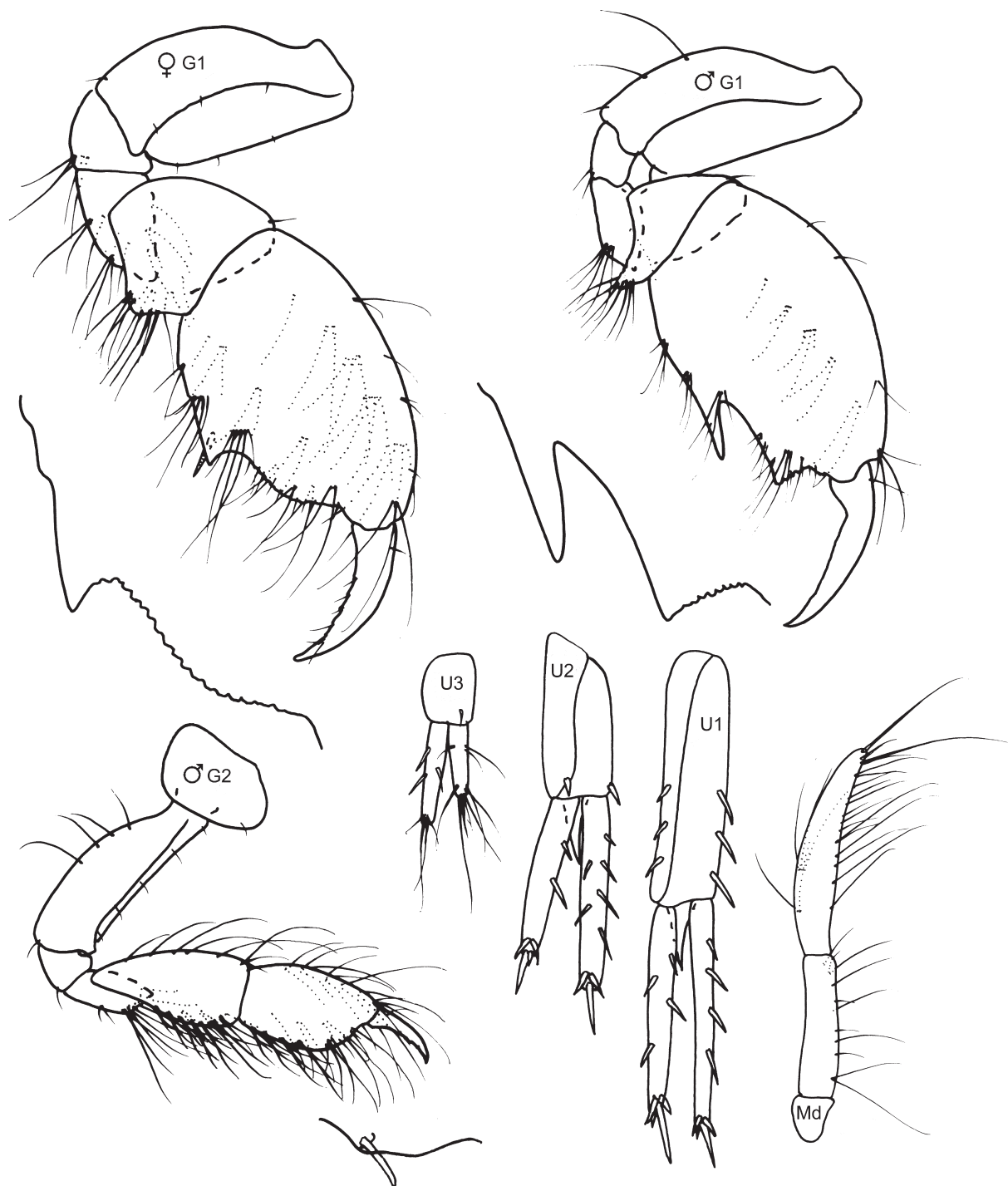


**FIGURE 35.** *Globosolembos springthorpei* sp. nov., holotype, male, 4.0 mm, AM P75467, east of North Point, Lizard Island, Great Barrier Reef.

**Description.** Based on holotype, male, 4.0 mm, AM P75467.

**Head.** Head lateral cephalic lobes apically rounded; eye large, orange brown. *Antenna 1* flagellum with about 16 articles; accessory flagellum multiarticulate. *Antenna 2* with moderately profuse long setae. *Lower*

*lip* with fine setae and stout setae. *Maxilla 1* inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 1.5 x length of article 2, posterior margin weakly falcate, posterior margin with setae of more than two distinct lengths.



**FIGURE 36.** *Globosolembos springthorpei* sp. nov., holotype, male, 4.0 mm, AM P75467, female, 3.5 mm, AM P75468, east of North Point, Lizard Island, Great Barrier Reef.

**Pereon.** *Pereonites* without sternal spines. *Gnathopod 1* enlarged in both sexes; coxa weakly produced anterodistally, rounded; basis robust, half or more as broad as long, anterodistal margin with strong flange; ischium anterior margin without flange, posterior margin with few setae; merus not greatly elongated, fused

along its entire length with carpus, posterior margin with few setae, without posterodistal spine; carpus one quarter length of propodus, anterior margin without spine; posterior margin with obtuse spine; propodus anterior margin moderately setiferous, posterior margin convex, palm short, straight, delimited from posterior margin, margin forming a broad excavate sinus, defined by strong posterodistal marginal spine, without robust seta, without spine near base of dactylus; dactylus less than half length of propodus, overlapping palm. *Gnathopod 2* subchelate; basis anterodistal margin with flange, posterodistal margin without robust setae, with few setae along length of basis; merus not enlarged or produced away from carpus; carpus distinctly longer than propodus, anterior margin not lobate, with long setae; carpus and propodus anterior margin with sparse long setae, palm with robust seta defining palm. *Pereopod 3* without brush of long setae on merus. *Pereopod 6* basis not produced posterodistally. *Pereopod 7* less than 125% length of pereopod 6.

**Pleon.** *Epimeron 3* posterodistal margin rounded. *Uropod 1* rami subequal, peduncle much longer than broad, distoventral spine much less than one third length of peduncle. *Uropod 2* biramous; peduncle with distoventral spine much less than half length of peduncle. *Uropod 3* biramous, rami distinctly unequal, endopod about 1.5 x length of peduncle. *Telson* with distal fine setae only.

**Female** (sexually dimorphic characters). Based on paratype, female, 3.5 mm, AM P75468. *Gnathopod 1* carpus more than one third length of propodus; propodus palm oblique, convex, delimited by acute, triangular spine, dactylus shorter and stouter than that of male.

**Habitat.** *Halimeda* with epiphytes.

**Remarks.** This species is very close to *G. forgesi* Myers, 1998 from New Caledonia, but differs in a number of ways. In the male gnathopod 1, the carpus is much shorter (about one quarter the length of the propodus), than it is in *G. forgesi* (more than a third length of propodus) and is strongly produced posterodistally (scarcely produced in *G. forgesi*); the spine on the posterior margin of the propodus is marginal in *G. springthorpei* **sp. nov.** but submarginal in *G. forgesi*. In the male gnathopod 2, the carpus of *G. springthorpei* is distinctly longer than the propodus whereas these two articles are subequal in *G. forgesi*. In the female gnathopod 1 the spine on the posterior margin of the propodus is acute in *G. springthorpei* but obtuse in *G. forgesi*. The uropod 1 distoventral spine of *G. springthorpei* scarcely reaches one quarter the length of the peduncle whereas in *G. forgesi* it approaches one half the length of the peduncle. Finally, article 3 of the mandibular palp is 1.5 x the length of article 2 in *G. springthorpei* whereas in *G. forgesi* articles 2 and 3 are subequal.

**Distribution.** *Australia*. Queensland: off North Point, Lizard Island (current study).

### ***Globosolembos varanus* sp. nov.**

(Figs 37, 38)

**Type material.** Holotype, male, 4.5 mm, AM P71210, Mermaid Cove, Lizard Island (14°38.91'S 145°27.26'E), encrusting algae & rubble, sand with rubble bottom, 2 m, T. Krapp, 28 February 2005 (QLD 1730). Paratype: 1 female, same data as holotype, AM P75466 (QLD 1730).

**Additional Material examined.** 1 female, AM P71211 (QLD 1728).

**Type Locality.** Mermaid Cove, Lizard Island, Queensland, Australia (14°38.91'S 145°27.26'E).

**Etymology.** Named after the goanna (monitor) genus *Varanus*, which gave Lizard Island (the type locality) its name.

**Description.** Based on holotype, male, 4.5 mm, AM P71210.

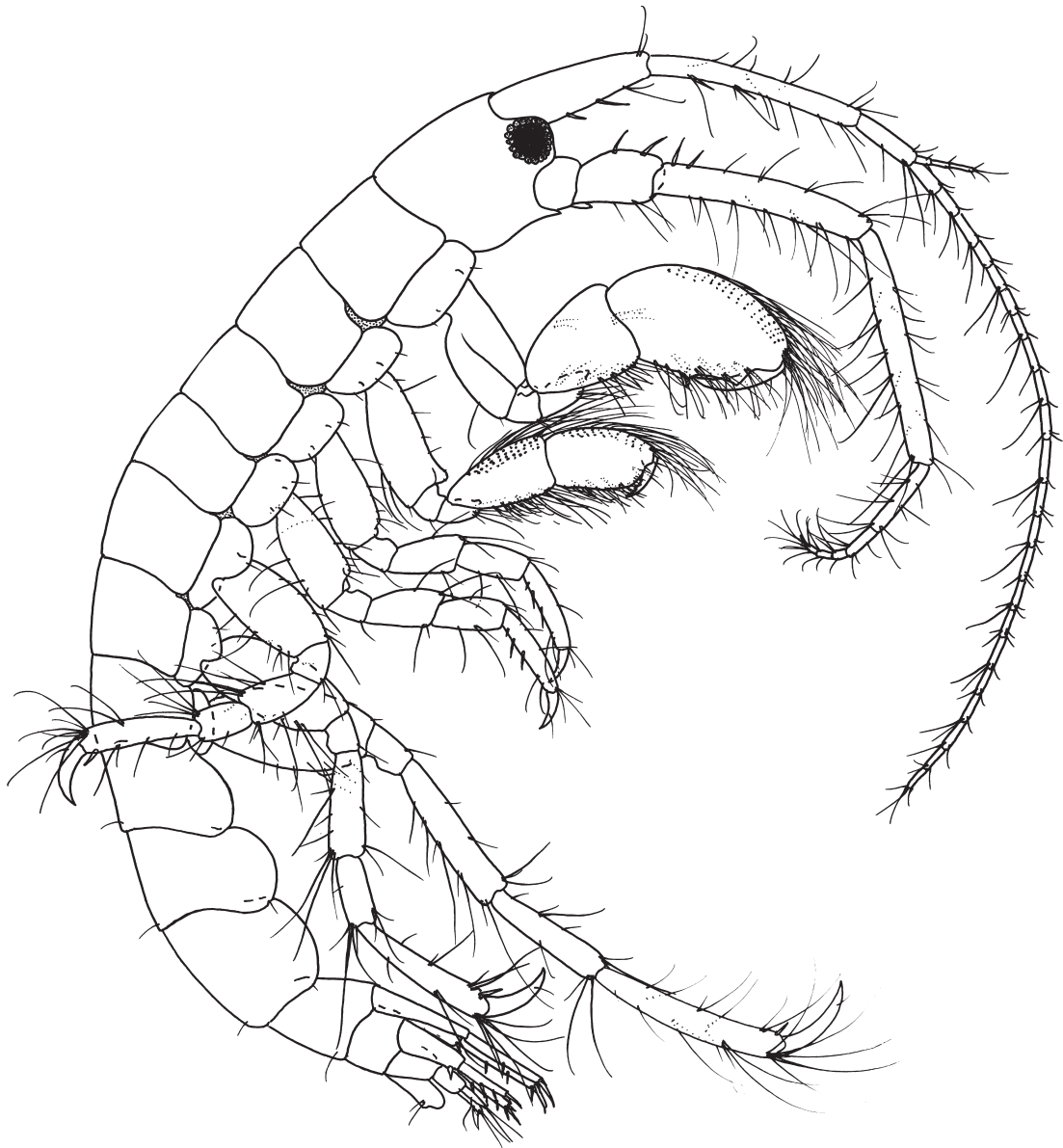
**Head.** Head lateral cephalic lobes apically truncate. *Antenna 1* flagellum with about 15 articles; accessory flagellum multiarticulate. *Antenna 2* with moderately profuse long setae. *Lower lip* with fine setae and stout setae. *Maxilla 1* inner plate with 1 long pectinate apical seta. *Mandible*, palp article 3 1.5 x length of article 2, posterior margin weakly falcate, posterior margin with setae of more than two distinct lengths.

**Pereon.** *Pereonites* without sternal spines. *Gnathopod 1* enlarged in both sexes; coxa weakly produced anterodistally, rounded; basis robust, half or more as broad as long, anterodistal margin with strong flange;



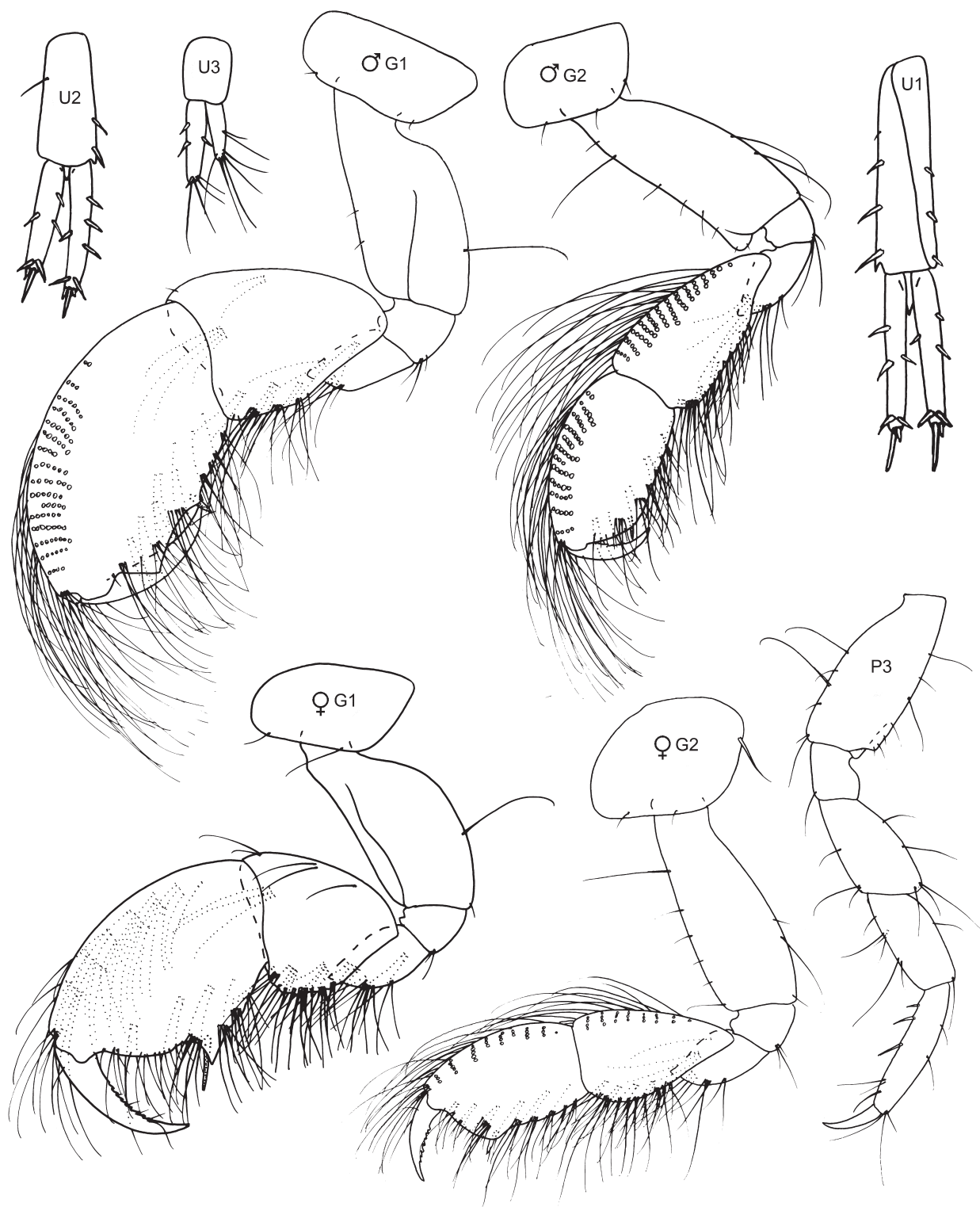
ischium anterior margin without flange, posterior margin with few setae; merus not greatly elongated, fused along its entire length with carpus, posterior margin with few setae, without posterodistal spine; carpus two thirds length of propodus, anterior margin without spine; posterior margin without spine; propodus anterior margin strongly setiferous, posterior margin sinuous, palm short, straight, delimited from posterior margin, by a broad, shallow excavation, defined by a robust seta, without spine near base of dactylus; dactylus half length of propodus, overlapping palm. *Gnathopod 2* subchelate; basis anterodistal margin with flange and distal lobe, posterodistal margin without robust setae; with few setae along length of basis; merus not enlarged or produced away from carpus; carpus and propodus subequal in length, anterior margin not lobate, with long setae; carpus and propodus anterior margins with dense long setae, palm with robust seta defining palm. *Pereopod 3* without brush of long setae on merus. *Pereopod 6* basis not produced posterodistally. *Pereopod 7* less than 125% length of pereopod 6.

**Pleon.** *Epimeron 3* posterodistal margin rounded. *Uropod 1* rami subequal, peduncle much longer than broad, distoventral spine less than one fifth length of peduncle. *Uropod 2* biramous; peduncle with rudimentary distoventral spine, much less than one eighth length of peduncle. *Uropod 3* biramous, rami distinctly unequal, endopod only a little longer than peduncle. *Telson* with distal fine setae only.



**FIGURE 37.** *Globosolembos varanus* sp. nov., holotype, male, 4.5 mm, AM P71210, Mermaid Cove, Lizard Island.





**FIGURE 38.** *Globosolembos varanus* **sp. nov.**, holotype, male, 4.5 mm, AM P71210, paratype female, 4.0 mm, AM P75466, Mermaid Cove, Lizard Island, Great Barrier Reef.

**Female** (sexually dimorphic characters). Based on paratype female, 4.5 mm, AM P75466. *Gnathopod 1* carpus a little over one half length of propodus; propodus palm oblique, convex, delimited by acute, triangular spine. *Gnathopod 2* similar to that of male but less elongate, basis without strong anterodistal flange.

**Habitat.** Coral rubble.

**Remarks.** *Globosolembos varanus* **sp. nov.** is similar to *G. rodriguensis* Myers, 2004 from Rodrigues in the Indian Ocean, but differs in several significant ways. The female gnathopod 1 is quite different, that of *G. rodriguensis* lacking the strong acute spine on the posterior margin of the propodus of *G. varanus*. In the male gnathopod 1, the palm of *G. varanus* is straight and the shallow excavation terminates posteriorly in a weak protrusion. In *G. rodriguensis*, the male gnathopod 1 palm is weakly concave and the excavation terminated posteriorly in a subacute spine. *Globosolembos varanus* also resembles *G. rimatara* Myers, 2005 from the Austral Isles, but the male gnathopod 1 propodus of that species has a much deeper excavation and the carpus and propodus are much less elongate. Uropod 2 of *G. rimatara* lacks an distoventral spine, and the female gnathopod 1 propodus has a much less oblique palm and is delimited by a small obtuse process. *G. lunatus* from Victoria is also similar, but differs in the shorter male gnathopod 1 carpus, the weakly flanged basis of the male gnathopod 2, the strong distoventral spines on uropods 1 and 2, the extensive array of robust setae on the rami uropods 1 and 2 and the absence of a strong acute spine on the posterior margin of the propodus of the female.

**Distribution.** *Australia.* Queensland: Mermaid Cove, Lizard Island (current study).

### ***Grandidierella* Coutière, 1904**

***Grandidierella bonnieroides*** Stephensen, 1948  
(Figs 39, 40, Pl. 2C)

*Grandidierella bonnieroides* Stephensen, 1948: 12, fig. 3. —Myers, 1970: 141. —Myers, 1981b: 218. —Asari & Myers, 1982: 252, figs 9–10. —Lowry & Stoddart, 2003: 70 (catalogue).

*Grandidierella megnae*. —Chilton, 1921: 548, fig. 10. —Stephensen, 1933: 434. —Shoemaker, 1935: 70.

*Unciolella lunata*. —Schellenberg, 1928: 669, fig. 207.

*Grandidierella bonnierii*. —K.H. Barnard, 1935: 299. —K.H. Barnard, 1951: 708. —K.H. Barnard, 1952: 279, fig. 1. —Pannikar & Aiyar, 1937: 294. —Schellenberg, 1938a: 215. —Shoemaker, 1948: 11, fig. 3. —Ruffo, 1958: 58, figs 8, 9. —Nayar, 1959: 38, pl. 14, figs 1–5. —Nayar, 1966: 161, fig. 17f.

**Material examined.** 1 male, 1 female AM P70766 (QLD 1655); 8 males, 3 females AM P70777 (QLD 1655); 200+ males, females AM P70805 (QLD 1655); 2 males, 2 females AM P70807 (QLD 1656); 1 juvenile AM P70902 (QLD 1676) 3 juveniles AM P70927 (QLD 1677); 1 female AM P70895 (QLD 1678); 2 males, 8 females, 3 juveniles AM P70852 (QLD 1679); 16 males, 13 females, 2 juveniles AM P70897 (QLD 1680).

**Type locality.** Salinja, Paloe Lechi, Bonaire, Netherlands Antilles, Caribbean Sea (~12°10'0"N 68°17'0"W).

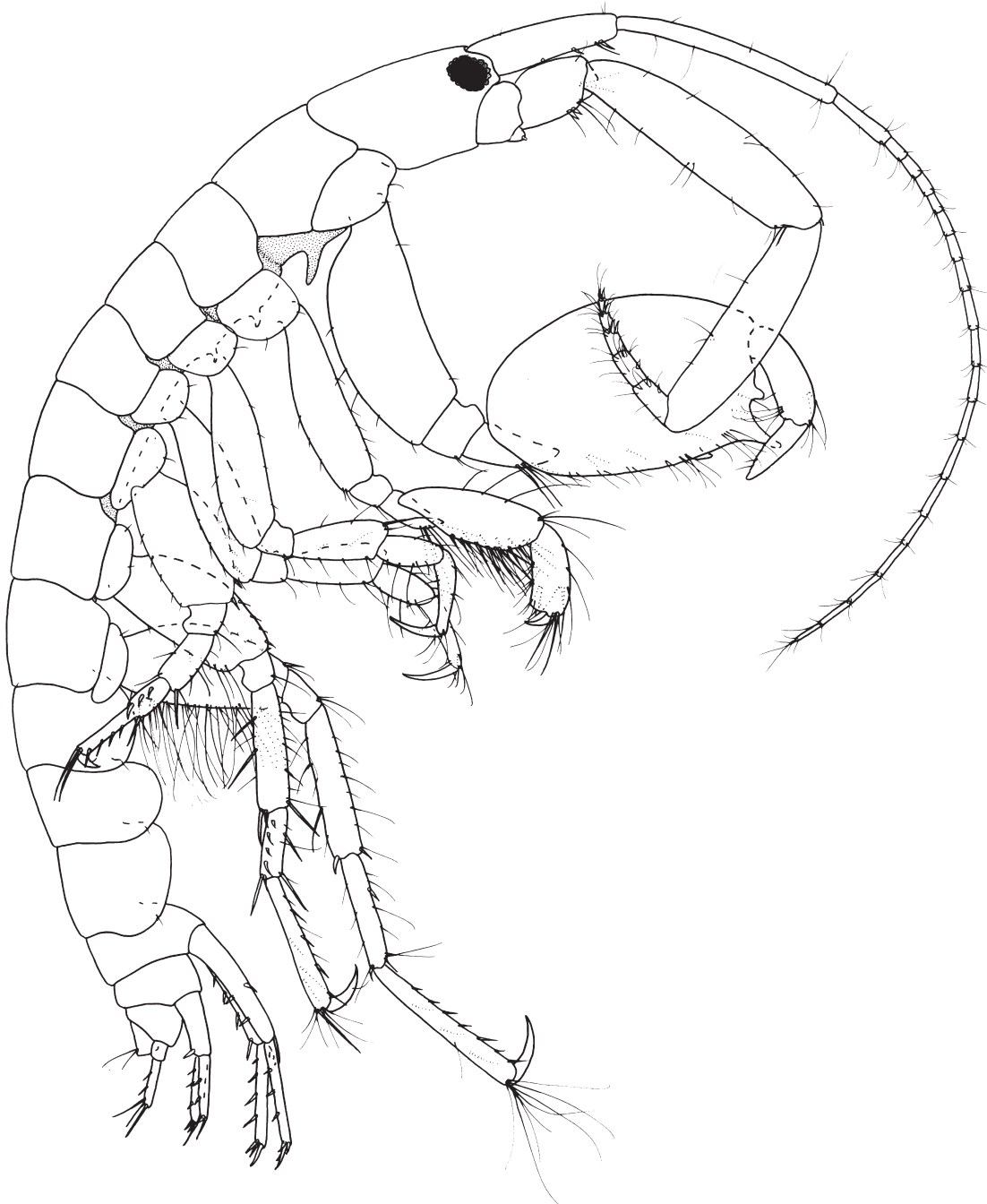
**Description.** Based on male, 5.0 mm, AM P70805.

**Head.** Head lateral cephalic lobes apically truncate. *Antenna 1* flagellum with about 19 articles; accessory flagellum with one long and one distal rudimentary article. *Antenna 2* with few long setae. *Lower lip* with fine setae only. *Maxilla 1* inner plate without setae. *Mandible*, palp article 3 subequal to 2, posterior margin substraight, setae distal.

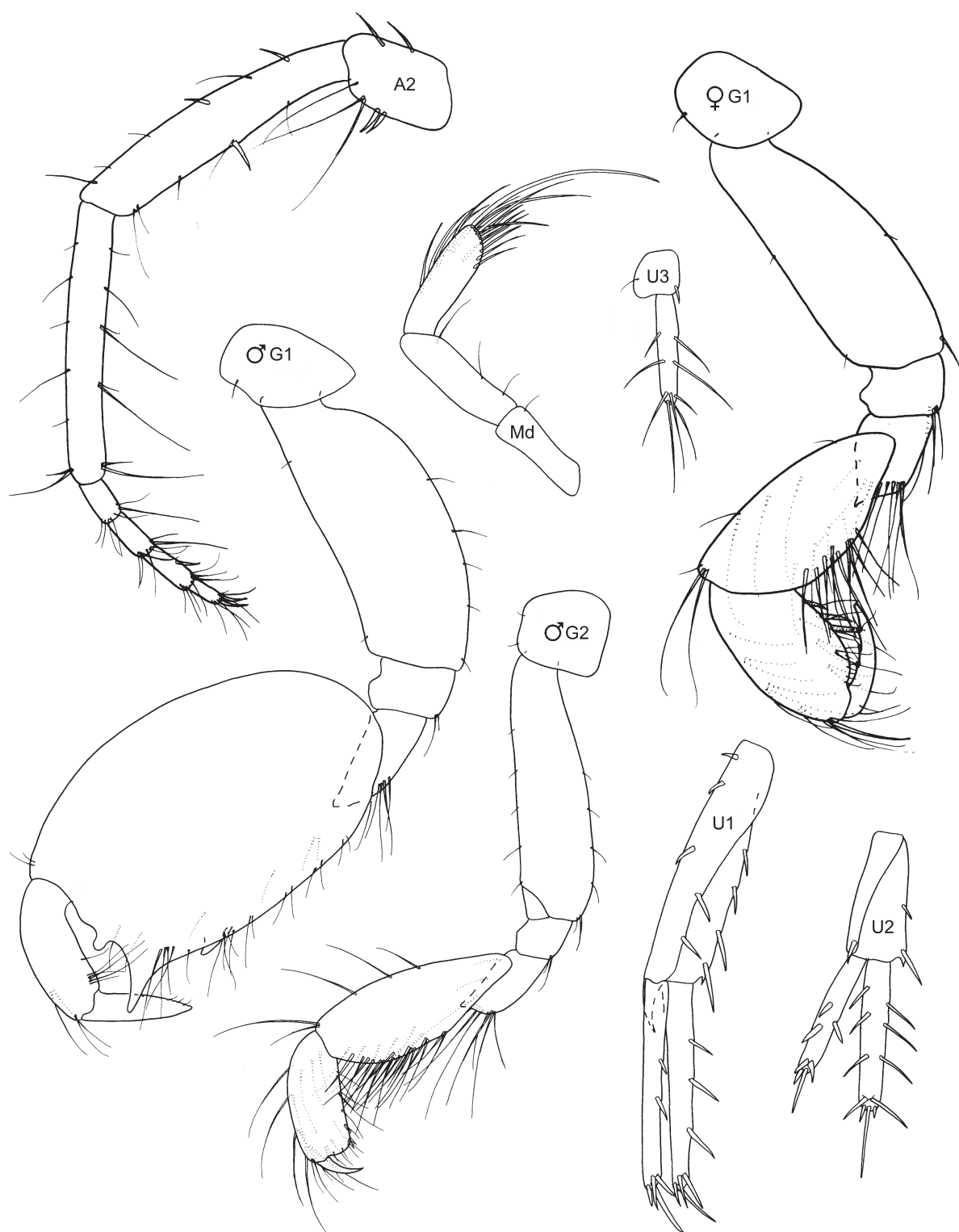
**Pereon.** *Pereonites 1–3* with apically acute sternal spines. *Gnathopod 1* enlarged in males only; coxa unproduced anterodistally. *Gnathopod 1* coxa ventral margin without small spine, basis robust, half or more as broad as long, without a spine, anterior margin without stridulating ridges, posterodistal margin with setae sparse, anterodistal margin with flange weak; ischium anterior margin without flange, posterior margin with setae sparse; merus not greatly elongated, fused along its entire length with carpus, posterior margin with sparse setae, without posterodistal spine; carpus twice length of propodus, anterior margin without stridulating ridges, with setae sparse, anterior margin with no spine, without an oblique row of long setae on inner face, posterior margin with submarginal spine, strong posterodistal spine, and smaller obtuse distal spine; propodus, anterior margin weakly setiferous, posterior margin straight or evenly convex, palm absent; dactylus more than half length of propodus. *Gnathopod 2* subchelate; basis anterodistal margin without flange, posterodistal

margin without robust setae, with few setae along length of basis; merus not enlarged or produced away from carpus; carpus longer than propodus, anterior margin not lobate, with a few spaced setae; propodus with few setae, palm with pair of robust setae defining palm. *Pereopod 3* without brush of long setae on merus. *Pereopod 6* basis not or weakly produced posterodistally. *Pereopod 7* significantly less than 125% length of pereopod 6.

**Pleon.** *Epimeron 3* posterodistal margin rounded. *Uropod 1* rami subequal, peduncle much longer than broad, distoventral spine one fifth length of peduncle. *Uropod 2* biramous; peduncle without distoventral spine. *Uropod 3* uniramous, ramus at least twice length of peduncle. *Telson* with distal fine setae only.



**FIGURE 39.** *Grandidierella bonnieroides* Stephensen, 1948, male, 5.0 mm, AM P70805, Ferriers Creek, Lizard Island, Great Barrier Reef.



**FIGURE 40.** *Grandidierella bonnieroides* Stephensen, 1948, male, 5.0 mm, female, 5.0 mm AM P70805, Ferriers Creek, Lizard Island, Great Barrier Reef.

**Female** (sexually dimorphic characters). Based on female 5.0 mm AM P70805. Sternal spines absent. *Gnathopod 1* basis slender, much less than half as broad as long; carpus a little longer than propodus; propodus palm present, evenly continuous with posterior margin, posterior margin with three robust setae; dactylus significantly overlapping palm.

**Habitat.** Associated with mangrove litter.

**Remarks.** This ‘species’ is recorded worldwide. It seems likely that it is actually a species complex, but it is not possible to determine this without further detailed study of world material. In the Great Barrier Reef, it

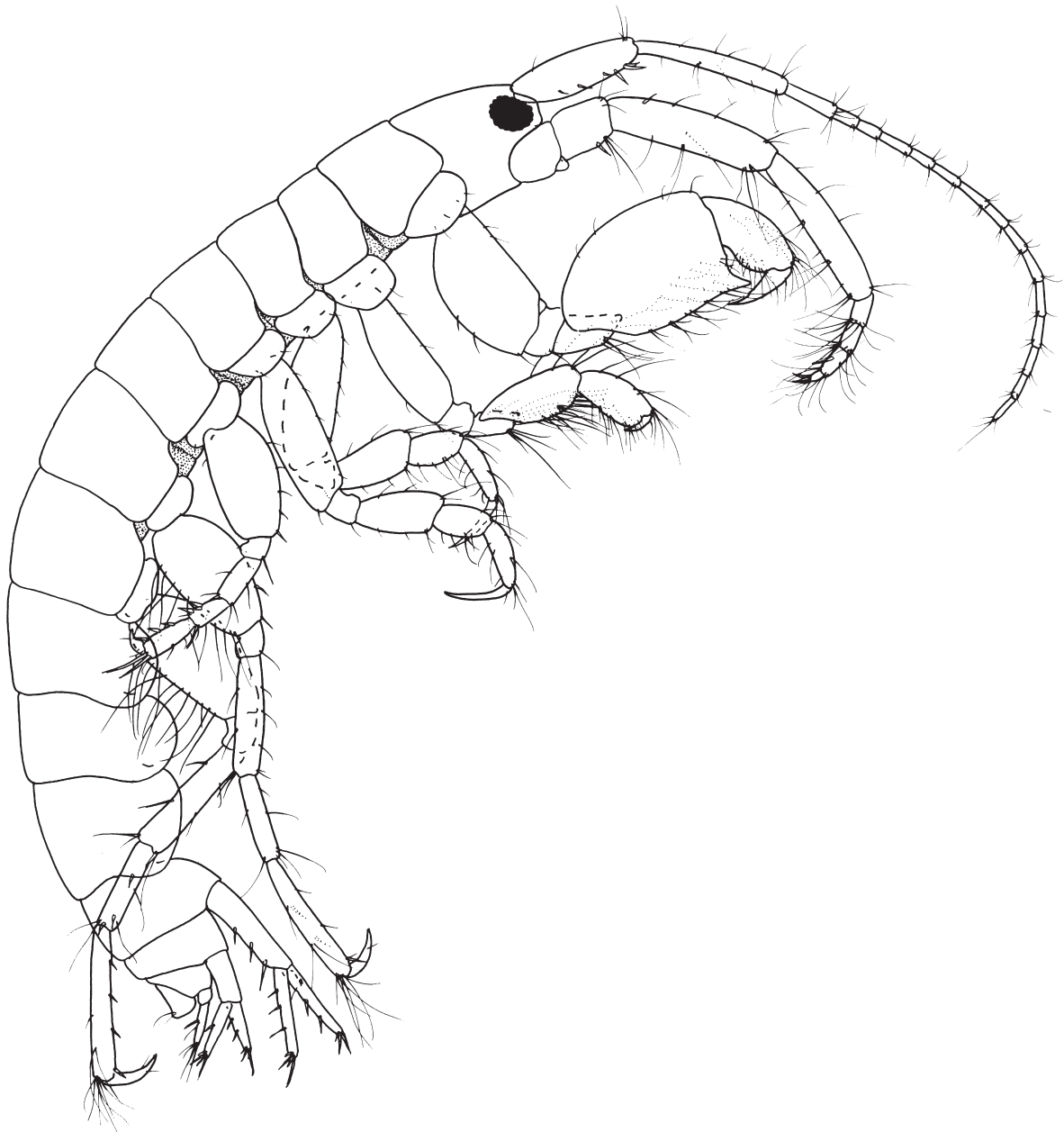
can be distinguished from the only other recorded species, *G. rhizophorae*, by the presence of a submarginal spine on the posterior margin of the carpus of the male gnathopod 1.

**Distribution.** *Australia.* Queensland. Lizard Island (Myers 1981 and current study). *Caribbean* (Stephensen 1948; Myers, 1970). *Africa* (Griffiths 1974), Madagascar (Ledoyer 1983). *India* (Asari & Myers 1982).

***Grandidierella rhizophorae* sp. nov.**

(Figs 41, 42, Pl. 2D)

**Type Material.** Holotype, male, 3.5 mm, AM P70562, Mangrove Beach, Lizard Island (14°40.78'S 145°27.76'E), mangrove detritus, *Rhizophora stylosa* in lagoon, 0.5 m, T. Krapp-Schickel, 23 February 2005 (QLD 1624). Paratypes. 5 females, AM P70583 (QLD 1629); 1 male, 1 female, AM P70584 (QLD 1631).



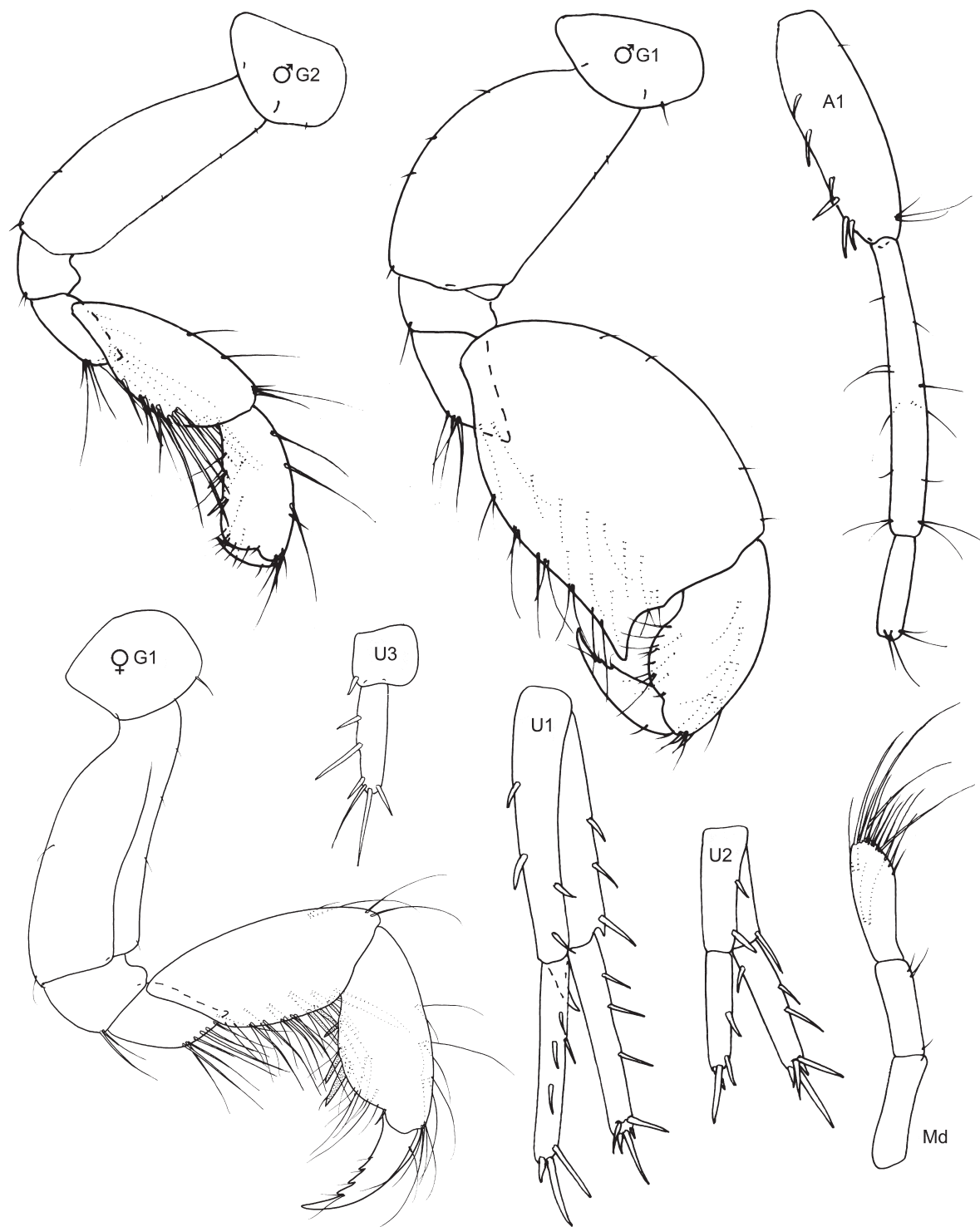
**FIGURE 41.** *Grandidierella rhizophorae* sp. nov., holotype, male, 3.5 mm, AM P70562, Mangrove Beach, Lizard Island, Great Barrier Reef.

**Type Locality.** Mangrove Beach, Lizard Island, Queensland, Australia (14°40.78'S 145°27.76'E).

**Etymology.** Named after the mangrove *Rhizophora*, in which the type material was collected.

**Description.** Based on holotype, male 3.5 mm, AM P70562.

**Head.** Head lateral cephalic lobes apically truncated. *Antenna 1* flagellum with about 15 articles; accessory flagellum absent or vestigial. *Antenna 2* with few long setae. *Lower lip* with fine setae only. *Maxilla 1* inner plate without setae. *Mandible*, palp article 3 longer than 2, posterior margin substraight, with distal setae.



**FIGURE 42.** *Grandidierella rhizophorae* sp. nov., holotype, male, 3.5 mm, AM P70562, female, 4.5 mm, AM P70583, Mangrove Beach, Lizard Island, Great Barrier Reef.



**Pereon.** *Pereonites* without sternal spines. *Gnathopod 1* enlarged in males only; coxa anterodistally rounded; basis robust, half or more as broad as long, with few or no setae present along margin, with setae sparse or absent, anterodistal margin with flange weak or absent; ischium anterior margin without flange; merus not greatly elongated, fused along its entire length with carpus, posterior margin with sparse setae or setae absent, without posterodistal spine; carpus one and one third to one and one half length of propodus, with setae sparse or absent, with one spine; propodus anterior margin moderately clothed in short setae, palm evenly continuous with posterior margin, margin entire, palm corner undefined; dactylus more than half length of propodus, significantly overlapping palm. *Gnathopod 2* basis anterior margin sub-straight, weakly setiferous, anterodistal margin without spine, posterodistal margin without robust setae; carpus longer than propodus, with long or short moderately spaced setae; propodus with long sparse setae. *Pereopod 3* basis anterior margin unexpanded, straight or weakly concave. *Pereopod 7* significantly less than 125% length of pereopod 6.

**Pleon.** *Epimeron 3* posterodistal margin rounded. *Uropod 1* distoventral spine shorter than peduncle. *Uropod 2* peduncle without distoventral spine or with vestigial spine. *Uropod 3* uniramous, inner ramus at least twice length of peduncle.

**Female** (sexually dimorphic characters). Based on paratype, female 4.5 mm, AM P70583. *Gnathopod 1* basis slender, much less than half as broad as long; carpus subequal in length with propodus; palm defined by strong posterodistal spine.

**Habitat.** Mangrove litter.

**Remarks.** Differs from *G. bonnieroides* by lacking a submarginal spine on the posterior margin of the carpus of the male gnathopod 1.

**Distribution.** *Australia.* Queensland: Mangrove Beach, Lizard Island (current study).

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